A MULTI-METHOD STUDY INVESTIGATING SICKNESS ABSENCE IN THE AMBULANCE SERVICE AND ITS ASSOCIATION WITH WORK-RELATED STRESS AND COPING STYLES

Laura Simmons

A thesis submitted in partial fulfilment of the requirements of the University of Lincoln for the degree of Doctor of Philosophy

School of Health and Social Care
College of Social Science

April 2020

Abstract

Ambulance service employees have higher levels of sickness absence (SA) compared to other populations. Understanding key factors that are associated with SA are crucial in developing interventions to improve SA. Therefore, the aim of this thesis was to investigate SA in one UK ambulance service and its association with stress and coping styles whilst developing ways in which it can be improved. This multi-method thesis included a systematic review (study 1) and an exploratory, sequential mixed methods study (study 2).

Prior to the experimental study, a systematic review was conducted to establish interventions that were effective in reducing sickness absence. Due to limited research in the ambulance service, interventions for healthcare workers were evaluated. Study 1 found three interventions that were effective in reducing SA, however, these interventions were inapplicable to the ambulance service due to problems regarding the timing, location and acceptability of delivery.

Due to the ineffective application of current SA interventions to ambulance staff, study 2 aimed to further investigate sickness absence in this context. Study 2 consisted of a explanatory, sequential mixed methods study with a quantitative phase followed by a qualitative phase of research. Within the quantitative phase, variables of interest (workload, perceived control, responsibility and social support) were examined in relation to coping styles (rational, emotional, avoidance and detached) and sickness absence across a 6-month time period. Data were collected using three self-report questionnaires to investigate the association between stress (NIOSH Job Stress Questionnaire and Daily Hassles-Revised), coping styles (Coping Styles Questionnaire) and SA in one UK ambulance service (n = 101). Full-time employees were recruited from one ambulance service in the United Kingdom using an opportunity sample. Data were analysed using negative binomial regression and results suggested an association between a decrease in social support and an increase in SA, an association between avoidance coping, mixed coping styles and an increase in SA compared to rational coping styles.

The qualitative phase of the study recruited a diverse range of participants from the quantitative phase using maximum variation sampling. This allowed participants with varying levels of SA, work-related stress and coping styles (n = 12) to be interviewed about their reasons, experienced and perceptions of SA. Data were collected using in-depth semi-structured interviews and found that participants were engaging in SA to maintain their wellbeing and to protect others. An overall negative perception of SA was found amongst participants who

perceived a strict and unfair SA policy. SA was also used as other types of leave and participants discussed engaging in presenteeism rather than SA.

The findings of this thesis are paramount in developing interventions with a specific focus on developing appropriate coping styles and increasing social support to improve SA within this population. Despite this, there are several limitations of the current research including the exclusion of part-time employees, the self-selecting nature of the recruitment methods and the measurement of perceived rather than physiological measures of stress. Nevertheless, this thesis contributed to the understanding of SA in the ambulance service by offering an insight into the associations between stress, coping styles and SA.

Acknowledgements

I would like to express my deepest gratitude to my supervisors Professor Niro Siriwardena, Dr Ruth Gaunt and Dr Zahid Asghar for their support, guidance and advice over the past three

years. As my supervisors you have provided me with many words of encouragement and have allowed me to develop my skills as an independent researcher and as an academic.

I would like to thank the Community and Health Research Unit and the Lincoln Institute of Health for supporting me throughout this journey. In particular, I would like to thank Professor Graham Law, Dr Arwel Jones and Dr Ffion Curtis for all the help and guidance you provided me over the course of my PhD.

This doctoral thesis would not exist without the funding and support from the Doctoral Training Alliance and the support from the School of Health and Social Care. Thank you in particular to Dr Kelly Sisson and Sue Bowler for the everything that you have provided me during my time at the University of Lincoln.

I would also like to thank the ambulance service that I worked with for their input on this project and for allowing me access to your service. I am eternally grateful for all the participants who took the time to take part in this study and for sharing your experiences with me, I hope you are all able to benefit from this research.

I wish to acknowledge and thank all the individuals who have helped me, personally and professional, on this journey through my PhD. I would like to thank my fellow students Hayley Robinson, Samuel Cooke, Sophie Mohamed, Nadia Maalin, Ksenia Trischel, Molly Browne and Alice Burgin who have provided me with the greatest friendship and opportunities to discuss ideas.

I would like to show my deepest appreciation to my partner Alex who has offered me endless love and support over the past three years. I hope you enjoyed exploring Lincolnshire as much as I did. Finally, I would like to express my gratitude to my Mum, Dad and sister Rowena for their love and understanding; without their support this thesis would not have been possible.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

Abbreviation	Meaning
α	Cronbach's Alpha
BPST	Baycrest Psychosocial Stress Test
CI	Confidence Interval
CISD	Critical Incident Stress Debriefing
CISM	Critical Incident Stress Management
CSM	Clinical Support Management
CSQ	Coping Styles Questionnaire
CTO	Combined Time Off
DAG	Directed Acyclic Graph
DSM-5	Diagnostic and Statistical Manual of Mental Disorders

DV	Dependent Variable
GAS	General Adaptation Syndrome
GLM	Generalised Linear Model
GP	General Practitioner
HCPC	Health and Care Professions Council
HPA	Hypothalamic-Pituitary Adrenal Axis
HRA	Health Research Authority
IV	Independent Variable
JD-C	Job Demands-Control
JD-R	Job Demands-Resources
LOC	Locus of Control
NEAS	North East Ambulance Service
NHS	National Health Service
NIOSH	National Institute of Occupational Safety and Health
OR	Odds Ratio
P-E Fit	Person-Environment Fit
P2P	Peer to Peer
PCW	Pastoral Care Worker
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSM	Propensity Score Matching
PTG	Post-Traumatic Growth
PTSD	Post-Traumatic Stress Disorder
RCT	Randomised Control Trial

RR	Risk Ratio
SA	Sickness absence
SNS	Sympathetic Nervous System
TRiM	Trauma Risk Management
TSST	Trier Social Stress Task
UK	United Kingdom
WMAS	West Midlands Ambulance Service

List of Publications from this Thesis

Simmons, L., Jones, A. W., Siriwardena, A. N., & Bridle, C. (2019). Interventions to reduce sickness absence among healthcare workers: A systematic review. *International Journal of Emergency Services, 8*(2), 147-162. https://doi.org/10.1108/IJES-05-2018-0028

List of Presentations from this Thesis

Simmons. L., Law, G., Gaunt, R., & Siriwardena, A. N. (2019, April). The relationship between stress, coping and sickness absence in the ambulance service. Paper presented at 999EMS, Birmingham.

Simmons. L., Law, G., Gaunt, R., & Siriwardena, A. N. (2019, February). Understanding sickness absence in the ambulance service. Paper presented at the Postgraduate Research Showcase, University of Lincoln.

Simmons. L., Law, G., Gaunt, R., & Siriwardena, A. N. (2019, January). Understanding sickness absence in the ambulance service. Paper presented at the Division of Occupational Psychology Annual Conference, Chester.

Simmons, L., Jones, A. W., Siriwardena, A. N., & Bridle, C. (2019, September). Interventions to reduce sickness absence among healthcare workers: A systematic review. Paper presented at Psychology Presence in the Midlands, University of Derby.

Chapter 1 Introduction

Ambulance service employees in the United Kingdom have one of the highest levels of sickness absence compared to other occupations within the National Health Service (NHS) (NHS Digital, 2018). In 2018, sickness absence rates for ambulance staff were 5.44%, compared to police (between 0.80% and 5.00%), nurses (3.08%), medical staff, such as doctors and dentists (1.29%) and the general population (2.00%) (Office for National Statistics, 2019).

The Heart of England NHS Trust (2010) defines sickness absence as a period of leave from work occurring when an individual or their General Practitioner (GP) assess the individual as being unfit to attend work due to the sudden onset of illness, chronic condition or accident.

Previous research into sickness absence indicates several consequences of high sickness absence on employees and the organisation. Increased levels of sickness absence can impact productivity, motivation, quality of life, staff performance and patient care (Boorman, 2009; Trybou et al., 2014). Moreover, sickness absence is expensive, with the NHS stating that they spend £2.4bn per year on staff absences (NHS England, 2015). Therefore, it is evident that there are significant financial costs of sickness absence on the organisation (Markussen, 2012).

Due to the current NHS financial and staffing crisis (House of Lords, 2017; Leys, 2016) in addition to recent political changes such as Brexit in the UK, causing uncertainty for the future of the NHS (Baird & McKenna, 2019; Office for Budget Responsibility, 2018), reducing high levels of sickness absence has been and continues to be a priority across the NHS (Boorman, 2009).

For ambulance services, there already exists variability in sickness absence, demonstrating that obtaining lower levels of sickness absence in the ambulance service is not unachievable. For example, in 2018, West Midlands Ambulance Service (WMAS) presented the lowest sickness

absence rate of 3.48% compared to the North East Ambulance Service (NEAS) who presented the highest rate of 6.17%. For the other services, such as East Midlands Ambulance Service (EMAS), sickness absence rates are moderately high, reporting a rate of 5.45% in 2018 (NHS Digital, 2019).

Moreover, within the Boorman review (2009), Boorman identified that reducing sickness absence by a third would save £555 million. Similarly, an independent report into sickness absence in EMAS published by FTI Consulting, demonstrated that reducing sickness absence to a similar level as WMAS (3.80%) could save the service £5.7 million (FTI Consulting, 2015). Currently. targets are in place for the NHS to reduce sickness absence rates across the service to 2.9% by 2022 (Carter, 2018). Therefore, by reducing sickness absence rates, the NHS could save money whilst improving staff motivation, productivity, performance and patient care (Boorman, 2009; Trybou et al., 2014).

In order to effectively reduce sickness absence within the ambulance service, an understanding of factors that contribute to high levels of sickness absence is required. Statistics demonstrate that out of the 5550 absences recorded in 2018, the main causes of sickness absence were gastrointestinal (26%), cold, cough and flu (14%) and anxiety, stress, depression and other psychiatric illnesses (11%) (East Midlands Ambulance Service, 2019). This suggests that two of the biggest contributing factors to sickness absence (gastrointestinal and influenza) stem from illnesses caused by infectious diseases and the immune system's inability to fight these pathogens, resulting in ill health (Segerstrom & Miller, 2004).

The third biggest contributor, stress and psychiatric illness, is not directly due to an infectious disease, however, theory has argued that stress increases the chances of becoming ill. A theoretical framework (Figure 9) has been developed due to the multitude of theories in the psychological and occupational literature, which can be found in Chapter 2 (section 2.4.4). This theoretical framework is an amalgamation of several theories, which help explain the relationships between stress, coping styles and sickness absence. For example, theories such as the Person-Environment Fit (French et al., 1974) proposed that if there is a lack of fit between the individual and their environment, they will experience stress, which will subsequently lead to illness[1]. Furthermore, Segerstrom and Miller (2004) highlighted that hormones secreted as part of the stress response (such as cortisol and adrenaline), impacts the white blood cells

[1] There are a multitude of theories that help explain the relationship between stress and sickness absence, which will be explored in Chapter 2

involved in the immune response and makes them unable to attack pathogens. This results in a compromised immune system, which makes the individual more susceptible to illness (Dhabhar, 2009).

In addition to stress having an impact on the immune system, previous research into ambulance wellbeing has identified that employees experience increased stress compared to the general population (Young & Cooper, 1995). These stressors have been identified as a lack of managerial support, shift work, a high level of responsibility and a lack of resources (Mahony, 2001; Sterud et al., 2011) in addition to responding to medical emergencies (Avraham et al., 2014) and daily stressors that exist outside of the working environment (Larsson et al., 2016). Donnelly (2012) further argued that occupational stressors, like those outlined by Sterud and Mahony, are often the most detrimental as they are persistent and enduring. Therefore, given that stress has a profound impact on the immune system, is one of the biggest contributors of sickness absence in the ambulance service, and is considered as a widespread experience, it is a factor that requires further exploration.

Stress is defined as "a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her wellbeing" (Lazarus & Folkman, 1984, p. 21). Stress occurs when individuals experience stressors, which are subjective events or situations that can provoke a stress response (Parasuraman & Alutto, 1984). The definition of stress can be further divided into an individual's subjective experience of a stressor (Eden, 1982) and their physiological reactions, such as increased heart rate (Selye, 1956). If the stressor persists and the individual is unable to cope with it effectively, they are at risk of exhaustion, also known as strain, which negatively impacts their psychological and physical wellbeing (Quick & Henderson, 2016).

Moreover, there are several types of stressors that have been extensively researched, including daily hassles and work-related stress. Daily hassles refer to "minor negative experiences which occur quite frequently on a regular basis" (Stefanek et al., 2012, p. 202). Examples of daily hassles include traffic and broken appliances, domestic responsibilities and financial concerns (Larsson et al., 2016). On the other hand, work-related stress (also known as job or occupational stress) refers to stress experienced within the working environment (Hassard et al., 2018). Throughout this thesis, these terms will be used interchangeably.

Theories surrounding the relationship between stress and sickness absence also refer to coping strategies or styles as a mitigating factor between experiencing stress, illness and subsequent sickness absence. Kiecolt-Glaser and Glaser (1988) highlight that individuals often turn to

unhealthy methods of coping, such as consuming alcohol or demonstrate changes in sleeping patterns, which also affects the immune system. As a result, coping, or lack of effective coping, can also be seen as an influential factor that may affect sickness absence.

Coping is defined as "the cognitive and behavioural efforts made to master, tolerate, or reduce external and internal demands and conflicts among them" (Folkman & Lazarus, 1980, p. 23). Cohen and Lazarus (1979) further state that the aim of coping is to decrease the effect of stressful situations and enhance recovery; adapt to or endure adverse circumstances; encourage positivity; balance emotions; and engage in fulfilling relationships with other individuals. Coping is not one, fixed behaviour but a construct that consists of several different actions (Skinner et al., 2003). Because of this, there are several terms in the literature such as coping strategies, mechanisms and behaviours that refer to the same process. A coping style refers to a combination of personality, locus of control (either internal or external) and perception of the stressor (Sahler & Carr, 2009). Furthermore, Coppens, de Boer and Koolhaas (2010) defined the term coping style as a “correlated set of individual, behavioural and physiological characteristics that are consistent over time and across situations” (p. 4021). Coping can, therefore, be defined as methods that individuals engage in to overcome or deal with a stressor in their environment. If this method is used consistently over time, this will become the individual's coping style.

In summary, this thesis stems from a need to target and improve sickness absence within the ambulance service to reduce the financial implications in addition to promoting a healthy workforce. Statistics released by EMAS demonstrate that gastrointestinal illness, influenza, anxiety, depression, stress and other psychiatric disorders are the main causes of sickness absence within this population. Theory has also suggested a tentative association between exposure to stress, a lack of appropriate coping and sickness absence, which requires investigation in order to improve sickness absence within the ambulance service.

Chapter 2 Literature Review

To further understand the relationship between sickness absence, stress and coping styles, this literature review will present an overview of the research evidence and theory related to these three concepts. The chapter will begin with a broad summary and explanation of the UK ambulance service followed by the conceptualisation and theoretical underpinnings of sickness absence. The chapter will then move towards a review of the research evidence, to provide an up-to-date understanding of the relationship between stress, coping styles and sickness absence. The literature review will then finish with an overview of the thesis' aims and objectives.

2.1 An introduction to the UK ambulance service

In the United Kingdom, the ambulance service is the primary emergency care provider in the NHS (Craggs & Blaber, 2008). The service has played an essential role in shaping emergency care across the NHS, is often the first port of call for medical emergencies and responds to approximately 6.6 million incidents per year (Morse, 2017).

The ambulance service has been in existence for over 60 years. Initially, the organisation was managed by either a local medical officer or fire chief. Until 1968, ambulance staff were employed as drivers and were only required to have a clean driving license and a first aid certificate (Pollock, 2015). Although the ambulance service has rapidly modernised throughout the 20th century, it was not until 2005 that the Health and Care Professions Council (HCPC) regulated and protected the title of *paramedic* (Craggs & Blaber, 2008). Since then, the central role of ambulance services is the emergency assessment, treatment and transportation of patients with a variety of acute and life-threatening illnesses and injuries (Caroline, 2008).

The UK ambulance service is currently comprised of thirteen Ambulance Service NHS Trusts with five being NHS Foundation Trusts. Unlike NHS Trusts, Foundation Trusts are receptive to patients' needs where local community members are able to have their say in the running of the service. Within ambulance services, there are a variety of different roles and responsibilities ranging from front-line staff who have direct contact with patients to support staff (Table 1).

Table 1. Roles and responsibilities within the UK ambulance service

Job Role	Description
Ambulance Care Assistant/Patient Transport Service (PTS) driver	Employees within this role assist with transporting patients to and from the hospital, including any outpatient appointments and admissions
Patient Transport Service (PTS) controller	Employees within this role are responsible for making sure that elderly or vulnerable individuals attend their appointments and often book transport in order for them to attend safely
Call Handler/Control Assistant	The primary responsibility for employees is to answer 999 calls and take details of the patient, that will be passed on to the emergency medical dispatchers
Emergency Medical Dispatcher	Employees use the information recorded by the call handler to dispatch the most appropriate resource to the patient, for example, an ambulance or helicopter
Emergency Care Assistant/Emergency Medical Technician	Individuals within this role work alongside paramedics to attend 999 calls
Paramedic	The role of a paramedic includes assessing, treating and making decisions about a patient. They or an Emergency Medical Technician/Emergency Care Assistant are usually the first healthcare professional on the scene of an emergency
Specialist Paramedic	Individuals employed within this role, including Consultant Paramedics, Advanced Paramedics, Emergency Care Practitioners, Community Paramedics and other similar titles have additional skills and qualifications that allow them to treat more patients. Some employees work on specialist units such as the air ambulance
Support staff	These include employees who are in non-clinical roles and are involved in the day-to-day running of the ambulance service. These include employees in human resources,

	finance, administration, health informatics, estates and motor vehicle maintenance

2.2 Defining sickness absence

The term sickness absence originates from several scientific disciplines including epidemiology, economics, sociology and psychology. Each provides a different perspective on sickness absence and its conceptualisation.

Sickness absence is a phenomenon that occurs in all workplaces and is another type of work-related absence alongside annual leave, maternity/paternity leave and compassionate leave (Alexanderson, 1998). The origins of sickness absence are said to derive from the transition through employment "from the barter economy to the age of financial economy, to wage labour and to the welfare state" (Virtanen et al., 2005, p. 28).

There are two types of sickness absence that are typically referred to within the literature. NICE (2019) define these are short-term sickness absences, characterised as absences that last up to four weeks and long-term sickness absence characterised as an absence that lasts between two and more than four weeks.

Traditionally, the medical approach has investigated sickness absence as an outcome in randomised controlled trials (Biering et al., 2015; Loisel et al., 2005) whilst economic approaches have focused on the financial consequences upon the economy (Allebeck & Mastekaasa, 2004), the individual affected, income security and insurance (Pertold & Westergaard-Nielsen, 2018). In contrast to the medical and economic approaches, the psychosocial approach concentrates on identifying factors that contribute to sickness absence to further understand its role in society and on an individual's behaviour (Ahmed et al., 1979).

Lawson (1980) states that sickness absence occurs when an individual fails to attend work due to illness. Alexanderson (1998) builds on Lawson's (1980) definition, stating that sickness absence is a period of leave from work due to an individual experiencing illness, which means they are unable to fulfil their social role of attending work. Sickness absence, therefore, occurs due to experiencing ill health or illness, which prevents an individual from attending work.

Within both Lawson and Alexanderson's definition of sickness absence, the individual is absent due to illness. Illness has been defined as "a feeling, an experience of unhealth which is entirely personal… often it accompanies disease, but the disease may be undeclared… sometimes illness exists where no disease can be found" (Marinker, 1975, p 82). This suggests

that an individual's personal experience of their illness may impact whether they engage in sickness absence, which further aligns with Lawson's and Alexanderson's definition.

Research suggests that an individual's illness experience is influenced by several factors including illness behaviour, the manifestation of disease and determinants of health. Mechanic (1986) argued that an individual undergoes a process of illness behaviour, which includes observing their bodies for abnormalities, establishing and explaining symptomology and taking action. Individuals may observe symptoms that are due to diseases (Wade & Halligan, 2004), which manifest in the body through deviations in physiological functioning (Strickland & Patrick, 2015). Disease can be separated into two different disease types: Non-communicable and communicable diseases. Non-communicable diseases, which are non-infectious and cannot be spread to others include cancer and heart disease, often caused by genes, environmental and lifestyle factors such as diet or a combination of these (Kim & Oh, 2013). In contrast, communicable, or infectious diseases such as meningitis, HIV/AIDS and influenza are often caused by infections (Rappaport, 2012).

An individual's illness experience is further shaped through social and behavioural determinants of health. Mechanic (2000) proposed several social determinants of health, which are factors related to an individual's social position that can influence health and illness: These include an individual's social class, age, race, sex and ethnicity. For example, Berkowitz et al. (2016) found that individuals living in low-income areas have an increased risk of diabetes.

Research has also focused heavily on the impact social determinants have on accessing healthcare (Taylor & Lamaro Haintz, 2018). In particular, Wallace, Ray and Degan (2018) found that poverty was related to individuals not attending doctors' appointments due to problems with transportation. These social determinants of health can influence an individual's illness experience through worsening existing conditions due to the inability to access healthcare or due to an increase prevalence of disease in certain populations (Mechanic, 2000).

Alongside social determinants of health, there are also behavioural determinants, such as an individual's perceptions of illness. Illness perceptions are defined as "cognitive representations or beliefs that patients have about their illness" (Petrie et al., 2007, p. 163). Research has suggested that an individual's illness perception can influence their health-related quality of life, particularly with non-communicable diseases (de Rooij et al., 2018). This notion further highlights that illness is a personal and subjective experience.

Parsons (1951) suggested the individual's perception of their health and wellness may be an influencing factor in sickness absence, primarily the adoption of the sick role. Parsons

suggested that first, an individual does not take responsibility for assuming the sick role. Secondly, individuals excuse themselves from their day-to-day responsibilities, which could include excusing themselves from work. Thirdly, they experience a period of recovery with the need to recover quickly and finally, will turn to help-seeking to assist with recovery. It is the second factor, excusing oneself from day-to-day responsibilities that is the most relevant factor for sickness absence. Parsons (1951) also suggested that the relationship between physician and patient also plays a role. In particular, Parsons viewed medicine as a means of social control in which physicians could uphold the sick role by providing or withholding sick certificates.

Burnham (2012) critiques Parson (1951) and Mechanic's (1986) work on the basis that it does not apply to the current, modern-day world. Burnham suggests that sociologists have moved away from these concepts due to diverting their attention from illness to health and encountering more chronic health conditions. Although Burnham focuses on the American healthcare system, he provides some useful ideas to consider[2]. Burnham suggests the withdrawal from day-to-day responsibilities is becoming more challenging, which is possibly due to factors that motivate an individual to attend work, such as money (Thulesius & Grahn, 2007). Furthermore, there has been a focus on preventative medicine, such as the use of human papillomavirus (HPV) vaccine in protecting against cervical cancer (Wang et al., 2015). Preventative medicine allows for health conditions to be prevented before they have occurred, which means that illness behaviours for some conditions are not required. Overall, this commentary from Burnham (2012) provides a powerful critique of early sociological theory. However, both the sick role and illness behaviour emphasise the importance of looking at the social response to illness rather than just the biological.

Nevertheless, the above provides evidence to suggest that illness is subjective and arises due to a number of different social and individual factors. Overall, it suggests that the presence of a disease (whether infectious or not), an individual's social status and perceptions of ill health can influence whether or not an individual engages in sickness absence.

The definition of illness proposed by Marinker (1975) suggests that disease may contribute to experiencing illness and sickness but is not a necessary condition for them to occur. One example of this is musculoskeletal injuries, which are a major cause of sickness absence (Health and Social Care Information Centre, 2017). Injuries can occur in the workplace because of heavy lifting, uncomfortable posture and vigorous movements (Fredriksson et al., 2000).

[2] An in-depth, historical overview of the sick role can be found in Burnham's (2012) paper

These injuries are sometimes not caused by pathological and physical processes that "deviate from the biological norm" (Marinker, 1975, p. 82) otherwise known as disease, but may contribute to an individual's experience of illness. Therefore, sickness absence may occur with or without disease, but the individual's experience of unhealth or in other words illness can contribute to adopting the sick role and therefore engaging in sickness absence (Alexanderson, 1998).

Drawing on this evidence, Lawson's (1980) and Alexanderson's (1998) definitions in their current form are not substantial enough as they do not provide clarification on the illness experience. For example, Lawson and Alexanderson provide no information on what the experience is and why the individual is experiencing it. Also, the definitions do not consider sickness as it excludes reference to help-seeking behaviours, which are a common part of experiencing sickness (as seen within the sick role and illness behaviour).

As well as the individual's perception of their health and wellness through illness behaviour and assuming the sick role, health practitioners may also influence whether an individual is absent from work due to illness. This stage is present within the sick role as turning to help-seeking and within illness behaviour as taking action, as individuals could seek medical help through their General Practitioner (GP) or other healthcare professionals, who could offer a sick note[3] that may support their illness behaviours (Money et al., 2010).

As previously mentioned within Chapter 1, sickness absence is also defined as a period of absence from work occurring when an individual themselves or their General Practitioner (GP) assess the individual as being unfit to attend work due to the sudden onset of illness, chronic condition or accident (Heart of England NHS Trust, 2010). This definition of sickness absence expands on Lawson's (1980) and Alexanderson's (1998) definition by including clarification on the illness experience. For example, the individual is that unwell they are physically unfit to carry out their job and therefore must have a negative illness experience.

Additionally, the definition expands to include non-disease related illness such as accidents, which Lawson's and Alexanderson's definition did not account for. Finally, the definition explains the role of the General Practitioner as well as the individual in the role of sickness, as reflected in the sick role and illness behaviour. Overall, it would seem that the Heart of England

[3] Also known as a fit note in the United Kingdom

NHS Trust's (2010) conceptualisation of sickness absence is most suitable when considering the sociological perspective of health.

This section has provided an overview of early definitions of sickness absence whilst considering their limitations and have discussed the terminology surrounding illness and disease leading to a more up-to-date conceptualisation of sickness absence. The next section will discuss the consequences of sickness absence to further understand why it should be further researched.

2.3 Consequences of sickness absence

Vingård et al. (2004) suggested that sickness absence has the potential to negatively impact the individual's wellbeing and quality of life through limiting opportunities at work, impacting personal finances and increasing the chance of isolation. More recently, research has found that sickness absence has a profound impact on the health of an individual. Gustafsson and Marklund (2011) argued that sickness absence was a predictor for ill health, which was quantified as poor health, physical complaints and mental wellbeing. Similarly, Mänty et al. (2017) found that the longer an individual is absent from work due to illness, the more prominent the effect is on mental and physical health. Overall, these two studies provide some evidence to suggest that sickness absence has a negative impact on an individual's physical and mental health.

This is further supported by evidence that has found an association between sickness absence and future sickness absence spells. Hultin et al. (2012) found that short-term absence increased the likelihood that an individual would have a spell of long-term sickness absence five years later. Moreover, Laaksonen et al. (2013) found similar evidence to suggest that past sickness absence spells increased the risk of future sickness absence spells. Laaksonen and colleagues also highlighted that this association was stronger for men and individuals who had longer sickness absence spells. These studies provide evidence to suggest that a previous history of sickness absence could lead to future sickness absences. In particular, an individual is at a higher risk of future sickness absence episodes if they have a history of longer periods of sickness absence.

With regards to the employee's social environment, Knapstad et al. (2014) argued that individuals with consistently high levels of sickness absence perceived lower levels of social support. This was also found with perceptions of management support, which were low when an individual engaged in sickness absence. This evidence supports the notion that being absent

from work impacts the individual's perception of their social environment, which could explain why individuals are at risk of isolation when they engage in sickness absence.

Despite this, there is a lack of evidence to suggest why this is the case. For example, the research does not provide an explanation as to whether the sickness absence spells for both the past and future absence are the same, indicating a potential underlying health condition. Additionally, research does not suggest whether it is the negative consequences of sickness absence, such as feeling isolated from the workplace or the impact on mental health, that may lead an individual to take another period of sickness absence.

Furthermore, research investigating the association between sickness absence and health have not focused on specific health conditions. For example, Gustafsson and Marklund (2011) looked at poor health but did not provide a definition of poor health. Therefore, it is unclear whether there are any specific associations between sickness absence and health conditions. By looking into the impact that sickness absence has on the individual, it is clear that there are several, negative consequences of sickness absence on the individual, which can impact their overall wellbeing.

Although sickness absence can have a profound impact on the employee, NICE (2019) suggest that there a variety of barriers to managing sickness absence, particularly within larger organisations. The most prominent impact is financial (Markussen, 2012) with Bevan and Hayday (2001) stating that sickness absence impacts the employer directly and indirectly. The direct costs include paying the employee's salary along with other benefits and the indirect costs stem from replacing the employee, either paying overtime for an internal employee or paying agency costs for an external candidate. Bevan and Hayday (2001) also highlight that there are other, significant costs related to time and resources that are required as part of the employee's return to work. For example, line managers must schedule time to conduct a return to work interview and complete paperwork surrounding the employee's absence. For organisations that already have a high workload, this has the potential to add pressure to these employers.

Sickness absence is an important component within the working environment as there are several, negative consequences on the employee and the employer. Therefore, understanding the key components of sickness absence in an organisation is a crucial area of research in order to begin to look for ways to reduce sickness absence and their associated consequences. Several attempts have been made within the literature to explain sickness absence using several

organisational and specific sickness absence theories. The following section of this literature review will outline the two main theoretical approaches to sickness absence.

2.4 Theoretical approaches to sickness absence

There is general agreement in the literature that there are two main theoretical approaches to understanding sickness absence (Allebeck & Mastekaasa, 2004); the withdrawal hypothesis and the stress-reaction hypothesis (Schaufeli et al., 2009).

The withdrawal hypothesis, also known as the pain-avoidance model, suggests that when an individual is not satisfied or lacks the motivation to do their job due to unpleasant circumstances at work, their levels of sickness absence increase (Chadwick-Jones et al., 1982). This is known as voluntary absence, as they are choosing to withdraw themselves from the working environment (Schaufeli et al., 2009). In contrast, the stress-reaction hypothesis suggests that sickness absence occurs due to increased exposure to stress in their working environment (Schaufeli et al., 2009). This approach suggests that sickness absence is an involuntary absence as an individual may be unable to carry out tasks at work due to illness as a result of stress exposure and subsequent ill health (Chadwick-Jones et al., 1982).

2.4.1 The withdrawal hypothesis

The conservation of resources theory (Hobfoll et al., 2018) suggests that individuals create, protect and attempt to preserve resources. Resources include a range of items such as physical objects (e.g. a car), work-related (e.g. status, employment), personal (e.g. self-esteem) and energy (e.g. money or knowledge) (Hobfoll et al., 2018). If these resources are threatened or lost, individuals may withdraw from the working environment and engage in sickness absence to prevent further loss of resources.

Academics have argued that the conservation of resources theory can explain why employees use sickness absence as a withdrawal behaviour (Nguyen et al., 2013; Nielsen et al., 2016). Nguyen et al. (2013) and Nielsen et al. (2016) suggests that if the workplace threatens an individual's resources, they may withdraw from that environment through the use of sickness absence. This theory is useful when applied to sickness absence as it could help explain why the duration of sickness absence increases when it is used as a withdrawal behaviour (Farquharson et al., 2012; Roelen et al., 2008; Ten Brummelhuis et al., 2013). As a result, the individual may stay absent from work until they believe there are no threats to their resources.

Moreover, the attendance motivation theory has also contributed to the understanding of the withdrawal hypothesis (Steers & Rhodes, 1978). According to this theory (Figure 1), situations

or events occurring at work (such as job demands or relationships with co-workers), job satisfaction, the values and expectation of the individual, the ability to attend in addition to the pressures to attend work, influences employee attendance.

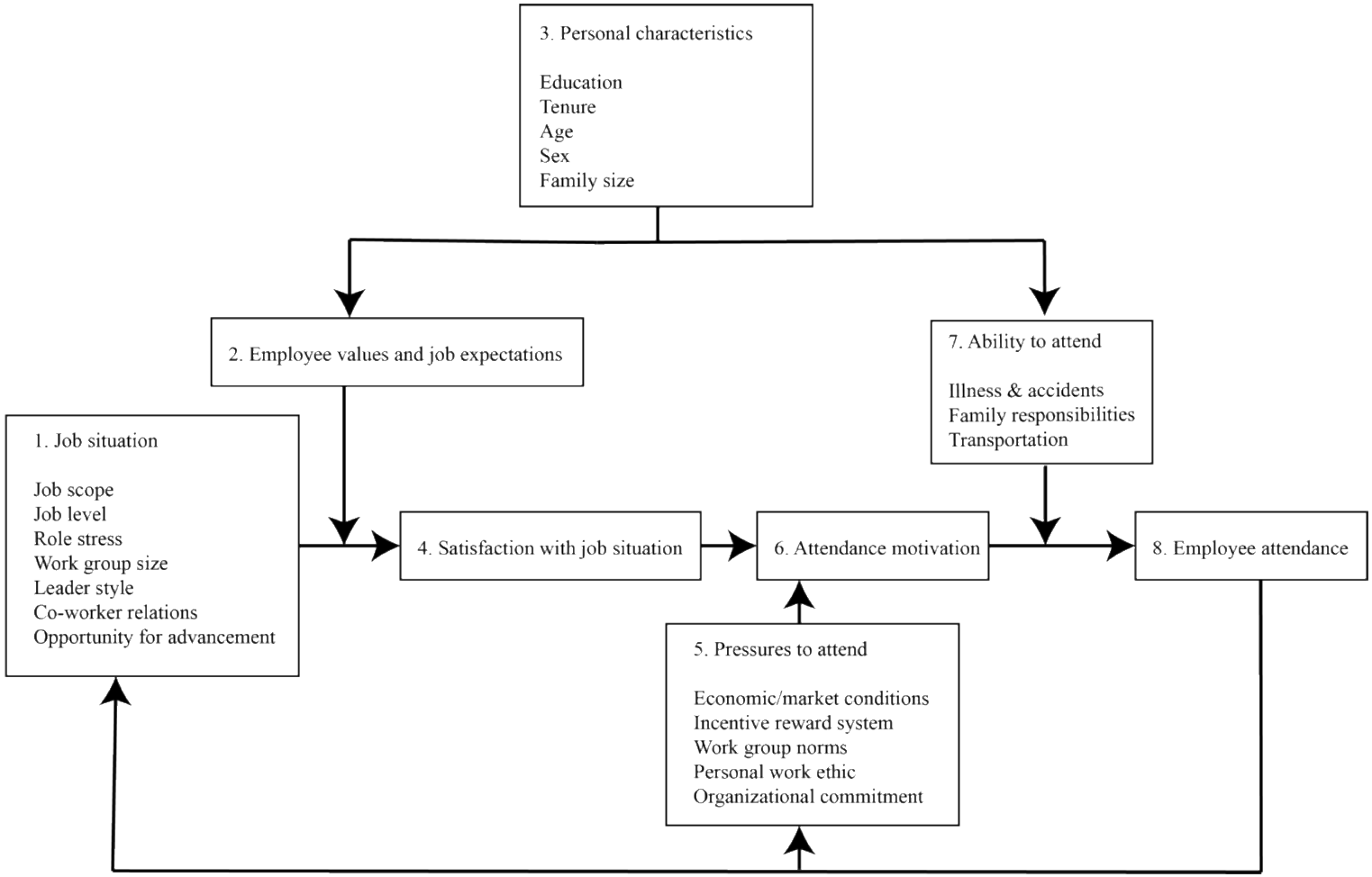


Figure 1. The Employee Attendance Process Model reproduced from Steers and Rhodes (1978)

Research has suggested that the withdrawal hypothesis is closely linked to factors such as protection, satisfaction and attendance motivation as, when an individual is not satisfied with their job or lacks motivation due to unpleasant circumstances, their sickness absence increases (Kristensen, 1991; Schaufeli et al., 2009). This has also been highlighted in the literature with Roelen et al. (2008), suggesting lower levels of job satisfaction were associated with an increase in the duration of sickness absence. Moreover, this relationship has been found among nurses who reported increased absence rates when they experienced reduce levels of job motivation (Ten Brummelhuis et al., 2013). As a result, low job satisfaction and a lack of motivation may partially explain why sickness absence is used as a withdrawal behaviour.

Although the conservation of resources and attendance motivation theories may go some way to explaining the relationship between sickness absence and withdrawal behaviour, there are limitations. The attendance motivation theory does not specify sickness absence as an outcome; instead, it is employee attendance, that is the outcome. As outlined by Alexanderson (1998), there are several other reasons why employees are absent from work, such as authorised holiday, maternity and compassionate leave. The factors displayed in the model may not lead to sickness absence but instead could lead to an individual scheduling authorised holiday. This notion has been supported by literature that suggests that holiday serves as an escape from work (Backer & Schänzel, 2013). Therefore, this model may be referring to other types of employee attendance rather than sickness absence exclusively.

What is interesting about these theories is that they both consider the influence of stress. The conservation of resources theory originated as an occupational stress model to explain what happens to individual resources when threatened with a stressful situation or event (Hobfoll et al., 2018). Similarly, with the attendance motivation theory, role stress is an influential factor in a job situation, which impacts job satisfaction. It could, therefore, suggest that stress is one of the unpleasant circumstances in the working environment that individuals who engage in sickness absence are avoiding.

Additionally, increased stress exposure has been linked to low levels of motivation and job satisfaction (Chung et al., 2017; De Simone Silvia et al., 2016), which according to these theories, are influential factors in withdrawal behaviour. As a result, stress could be the common denominator and underlying influencer in sickness absence.

2.4.2 The stress-reaction hypothesis

The stress-reaction hypothesis suggests that sickness absence occurs due to prolonged exposure to stress (Schaufeli et al., 2009). This approach suggests that sickness absence is an involuntary

absence, as an individual may be unable to carry out tasks at work due to illness as a result of stress exposure (Chadwick-Jones et al., 1982). In contrast to the withdrawal hypothesis that mainly focuses on motivation and satisfaction, the stress-reaction hypothesis is more multifaceted and considers theories across a range of disciplines including psychology, sociology and medicine (Allebeck & Mastekaasa, 2004).

In order to fully understand the stress-reaction hypothesis, it is important to first consider the physiological and psychological reactions to stress followed by specific occupational theory that further explains the association between stress, coping styles and sickness absence.

Stress was first described as a physiological reaction to stressors through Selye's (1936) General Adaptation Syndrome (GAS). Within his theory, Selye suggested that the body undergoes several physiological changes in which the body's resources eventually deplete leading to wear and tear. Within the original theory, there were three stages: alarm, resistance and exhaustion.

The first stage, alarm, occurs when the sympathetic division of the autonomic nervous system is activated. The body reacts by producing adrenaline and noradrenaline secreted from the inner part (the medulla) of the adrenal gland, which lie just above kidneys. Circulating adrenaline in the blood leads to conversion of glycogen stored in the liver to glucose. Glucose circulating in the body is available for the muscles and brain, which helps prepare the individual for fight-or-flight. During fight or flight, the activation of the adrenal cortex (the layer outside the medulla) takes place releasing cortisol which increases heart rate and blood pressure, preparing the body to take action (Goldstein, 1987). The second stage, resistance, occurs after the alarm stage where the parasympathetic division is activated that helps the body return to normal by ceasing the fight-or-flight response (Harrington, 2013).

The final stage, exhaustion, occurs when resources of energy (glucose) and hormones are relatively depleted following the body's attempt to restore itself in the resistance stage. If the threat is no longer present, the body will continue to return to its usual state of balance or homeostasis. However, if the threat persists, then the body may show signs of exhaustion. Being in the exhaustion stage means that there has been significant wear and tear on the body, in particular, the nervous system, which can increase vulnerability to disease.

Selye's original work has been critiqued on the basis that the majority of his early work into stress were conducted on rats. Bracken (2009) has since argued that animal studies are poor predictors of how humans react to various stimuli in their environment. However, the hypothalamic-pituitary-axis (HPA) described by Selye in the alarm stage has been extensively

researched in humans and is now an established physiological response to stress (Joseph & Whirledge, 2017).

Research has also expanded on Seyle's original GAS theory by suggesting that hormones secreted into the blood during the stress response, such as cortisol, impact the performance of white blood cells leading them to become ineffective at attacking pathogens (Segerstrom & Miller, 2004). This leads an individual at risk of infection through the suppression of the immune system (Cohen et al., 1991; Dhabhar, 2009).

Alongside the physiological reaction to stress, other theories have attempted to describe the psychological response to stress. An example of this is the Transactional Model of Stress and Coping outlined by Lazarus and Folkman (1984). The premise of this model is that if an individual perceives the event (i.e. job demands) to be a threat, and believes that they do not have adequate resources to deal with the situation, then they will continue to experience stress until they either no longer perceive the event as a threat or they believe they have appropriate coping resources. The model suggests a two-way transactional process occurring between three stages: primary appraisal; secondary appraisal; and stress (Figure 2).

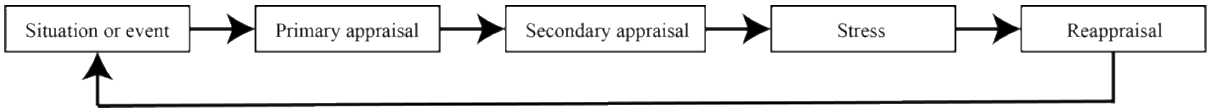


Figure 2. The Transactional Model of Stress and Coping reproduced from Lazarus and Folkman (1984)

The first phase of primary appraisal occurs when an individual perceives a stressor as a threat. These threats can be physical (such as a job loss) or psychological (such as a loss of confidence). These types of losses that are perceived to cause harm to the individual are called harm-loss appraisals. In contrast, the individual can also speculate about future threats. For example, an individual may view increasing job demands as a threat.

The phase of secondary appraisal includes the self-evaluation of how well an individual believes they can cope with an event or situation. Control is an important factor in secondary appraisal, as those who have low control over the situation experience higher levels of stress (McVicar, 2016). Therefore, if an individual is unable to control the stressor, they are more likely to experience stress.

It is important to note that the model is transactional, and as such, individuals can move backwards and forwards through reappraising themselves and their environment. There is a constant and on-going appraisal based on the assessment of the environment and the self-evaluation of how well that individual thinks they are coping with the situation.

The Transactional Model of Stress and Coping provides a useful overview of the psychological response to stress by outlining the cognitive and behavioural factors involved. However, both the physiological and psychological reactions to stress do not outline how these factors are associated with sickness absence. As sickness absence is a phenomenon that occurs within the workplace (Alexanderson, 1998; Heart of England NHS Trust, 2014), this chapter will now consider work-related theories of stress to help explain the association between stress, coping styles and sickness absence.

Occupational theories, such as the Person-Environment Fit (French et al., 1974) suggest that stress occurs when individual factors (e.g. abilities and tolerance) do not match the environment (e.g. demands). If there is a lack of fit between the person and their environment, the individual will experience stress (French et al., 1974). Harrison's (1978) interpretation of this theory is displayed in Figure 3, which demonstrates how illness is the outcome of a lack of fit between a person and their environment.

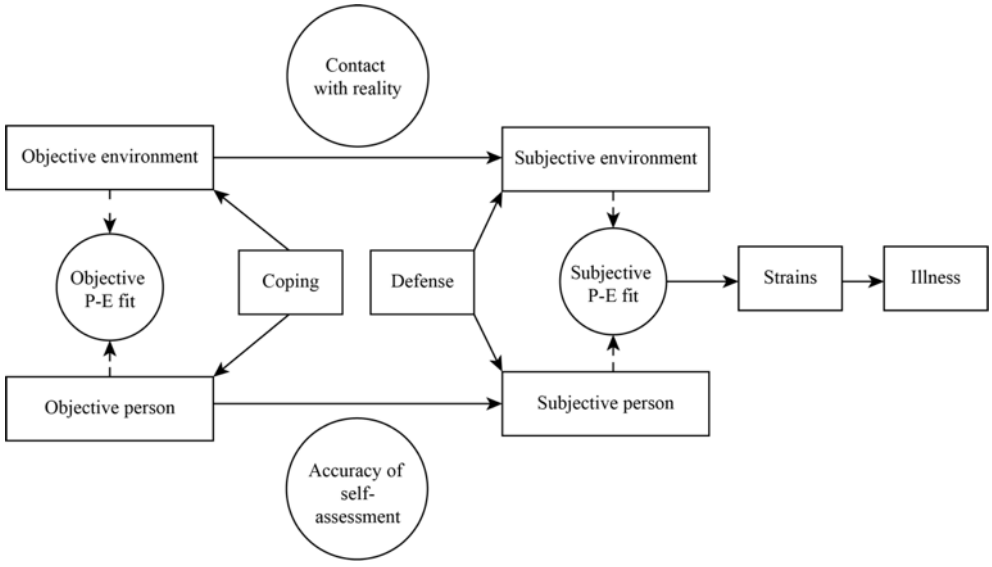


Figure 3. The Person-Environment Fit model reproduced from Harrison (1978)

Since the original conception of the theory, research has suggested there are different types of lack of fit between person and environment (Cable & DeRue, 2002). These include a lack of fit between the person and organisation (Tong, 2015), needs-supplies, demands-abilities, person-vocation (Vogel & Feldman, 2009) and most recently, person-supervisor (Andela & van der Doef, 2018).

Alongside the person-environment fit theory, the Effort-Reward Imbalance theory (Siegrist et al., 1986) also explains how stress occurs. The theory (Figure 4) suggests that a high level of effort from the employee and minimal rewards leads to experiencing stress (Calnan et al., 2004).

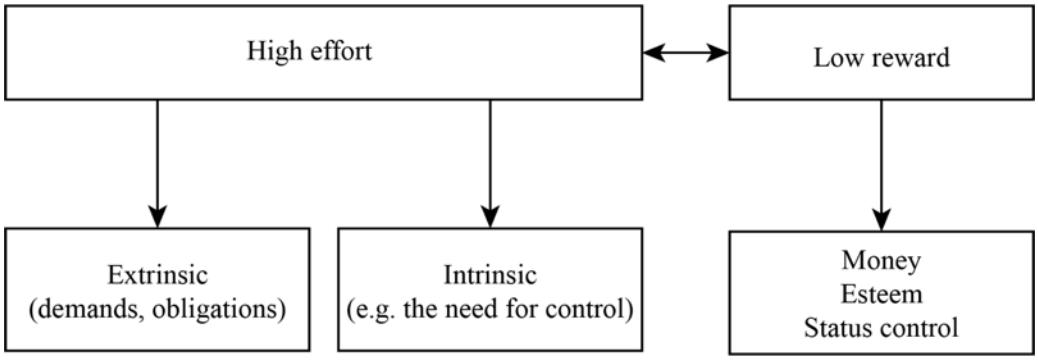


Figure 4. The Effort-Reward Imbalance model reproduced from Siegrist (1986)

Until recently, the Effort-Reward Imbalance theory was exclusively used to explain and measure work stress (Allebeck & Mastekaasa, 2004). However, over the past decade, research has found an association between sickness absence and an imbalance between effort and reward (Schreuder et al., 2010), suggesting this theory could be used to explain the interaction between stress and sickness absence. Two systematic reviews by Eddy et al. (2016) and Siegrist et al. (2017) also found that an imbalance between effort and reward was associated with physiological outcomes such as inflammation and lower immunity. Together, these systematic reviews highlight the association between experiencing stress due to high effort and low reward, illness and subsequent sickness absence.

With regards to rewards and feeling valued in the workplace, Leineweber (2017) further found that lower levels of interpersonal justice, defined as treating other employees with respect, were related to increased and more frequently occurring sickness absence. This suggests that feeling undervalued in the workplace may increase the likelihood of experiencing sickness absence and provide support for the Effort-Reward Imbalance theory.

The Job-Demands-Control (JD-C) model (Figure 5) proposed by Karasek (1979) also builds on the theory of effort-reward imbalance by suggesting an imbalance between demand and control. This theory suggests that experiencing high demand and low control leads to stress (Jex & Kain, 2010). Schaufeli and Bakker (2004) define job demands as "physical, psychological, social or organisational aspects of the job that require sustained physical and/or psychological effort and are therefore associated with certain physiological and/or psychological costs" (p. 296). Job control is defined as the extent to which decision latitude is present, such as whether an individual can take control over their job demands (Karasek, 1979; Karasek et al., 1981).

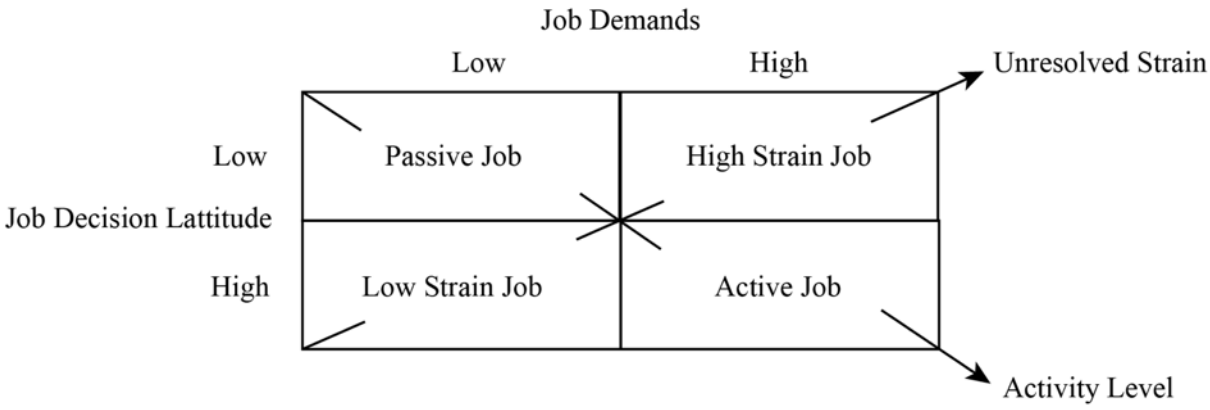


Figure 5. Job-Demands-Control (JD-C) model reproduced from Karasek (1979)

The model suggests that if individuals experience high job demand in the workplace and have low decision latitude, they will experience job strain, which could cause ill health and subsequent sickness absence (Nätti et al., 2015). For example, Nätti and colleagues found that employees who have a high level of control over the start and end times of their shifts have less sickness absence than individuals who do not. Together, this provides evidence that supports the stress-reaction hypothesis.

An imbalance between job demands and control was also theorised within a 'process model' of sickness absence (Gründemann & Vuuren, 1998). Within their model, sickness absence occurs due to the inability to balance workload and capacity, which leads to health problems

and subsequent sickness absence. Individual factors (such as age and sex), workplace factors (such as shift work) and societal factors (such as domestic responsibilities) also influence these interactions.

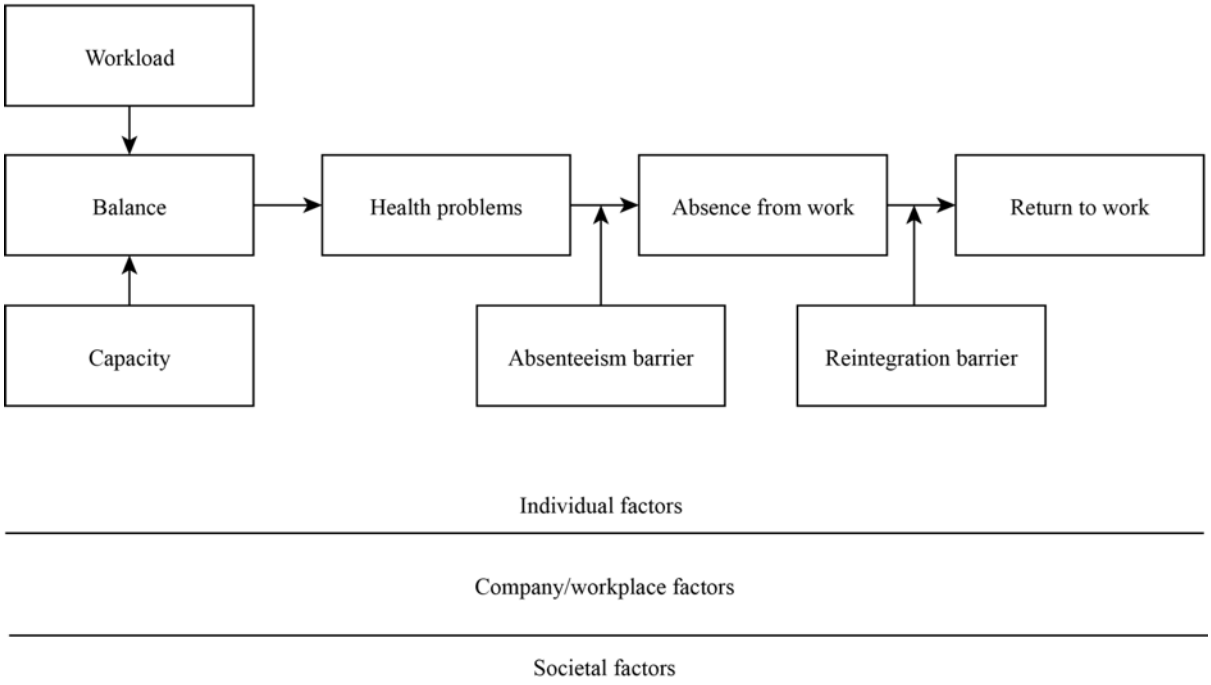


Figure 6. A process model of sickness absence reproduced from Gründemann & Vurren (1998)

The process model (Figure 6) is one of few theories that consider sickness absence in isolation compared to other theories that consider sickness absence in amongst other organisational outcomes (e.g. Job-Demands-Resources model). It also provides an indication of how sickness absence occurs, which aligns with the medical conceptualisation of sickness absence as a health-related phenomenon (e.g. Kivimaki et al., 2004; Marmot et al., 1995).

More recently theories, such as the Job-Demands-Resources (JDR) model (Figure 7), suggests job resources (such as support, autonomy and feedback) are a buffer on job demands (Bakker & Demerouti, 2007). The theory suggests that if employees have a high level of job demands but a low level of job resources, they could experience strain and subsequent organisational outcomes, such as sickness absence.

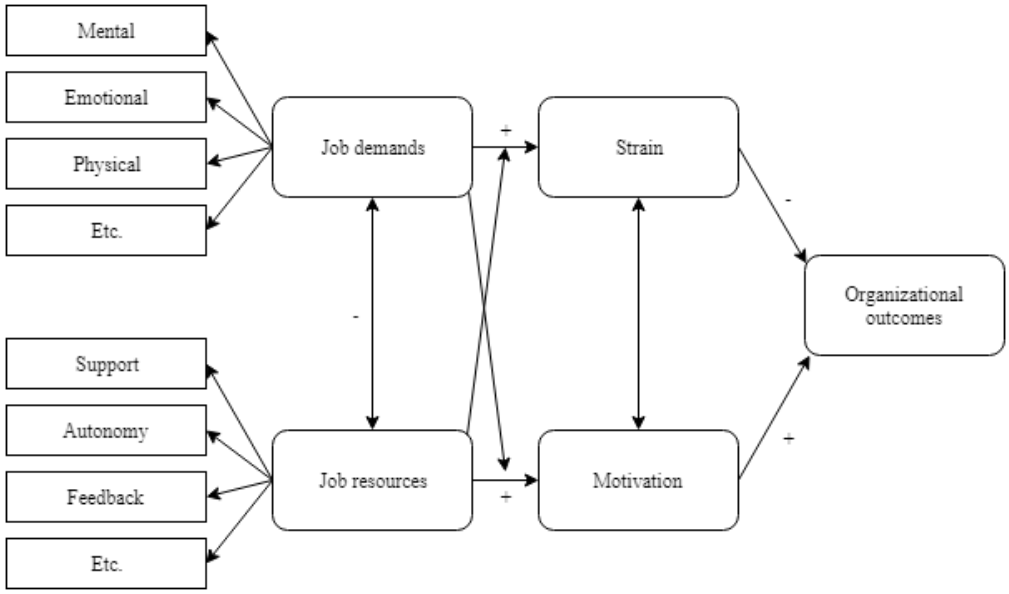


Figure 7. Job Demands-Resources (JD-R) model reproduced from Bakker and Demerouti (2007)

The JD-R has been used as a theory within research to address factors related to sickness absence. An example of this can be seen within Notenbomer et al.'s (2016) work, which aimed to ascertain why employees frequently engaged in sickness absence. Notenbomer and colleagues found that participants reported several job demands including pressures at work, the physical environment of the workplace and revealed that if the demands experienced exceeded the individual's capacity to work, this led to ill health and sickness absence. Notenbomer and colleagues also asked participant's how their sickness absence could be improved, and participants stated that increasing resources such as social support and feedback would reduce job demands and subsequent sickness absence. This highlights that increasing access to resources could potentially reduce sickness absence through reducing the impact that job demands have on an individual.

In addition to these theories, Hart and Cooper (2001) proposed the Organisational Health Research Model, which combines several organisational stress theories (including the Transactional Model of Stress and Coping). This multi-level approach provides an insight into individual and workplace factors that are related to several organisational outcomes, including sickness absence (Figure 8).

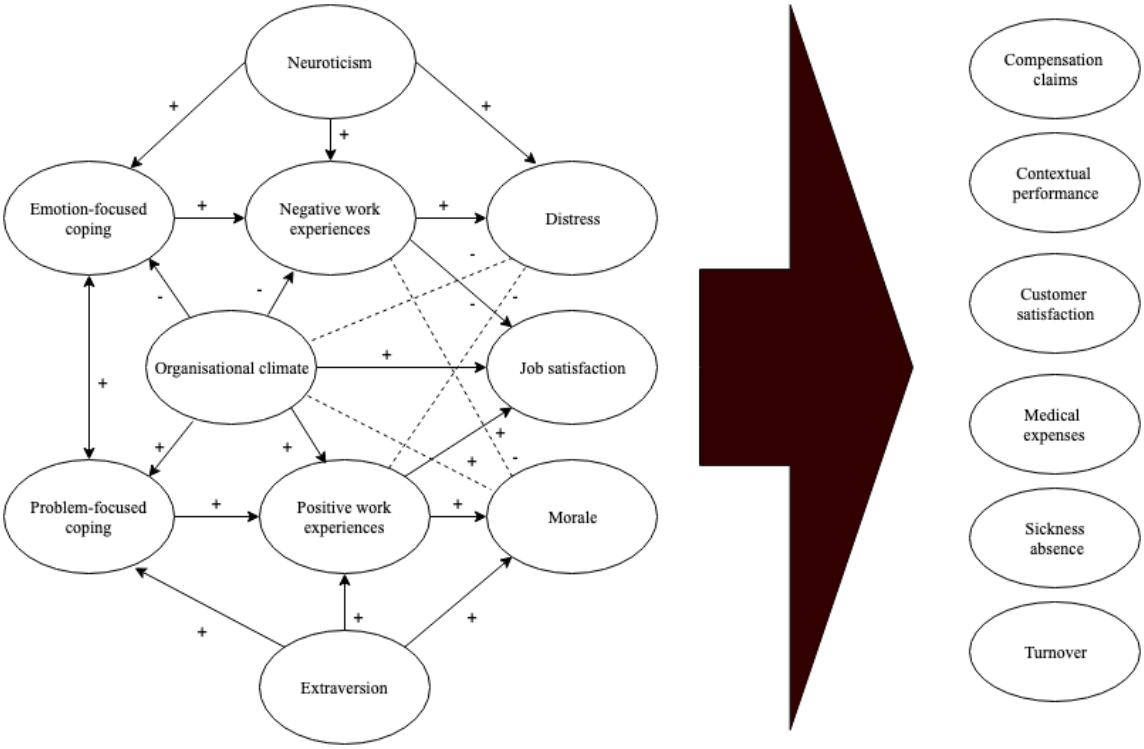


Figure 8. The Organisational Health Research Model reproduced from Hart and Cooper (2001)[4]

The model suggests there are several individual factors (such as coping styles), organisational factors (such as the organisational climate) and social factors (such as morale) that contribute to sickness absence. However, Hart and Cooper (2001) argue that this theory does not provide an exhaustive list of variables that are associated with organisational outcomes. Instead, it acts as a heuristic model to assist in forming research hypotheses (Popov et al., 2017). Nevertheless, it does provide an interesting theoretical perspective of the relationship between stress, coping styles and sickness absence.

By considering the theory surrounding occupational stress, it is evident that a stress-reaction hypothesis provides a valid approach to sickness absence. The Person-Environment Fit (French, Rodgers and Cobb, 1974), Effort-Reward Imbalance (Siegrist, 1996; Siegrist et al., 1986), Job-Demands-Control (Karasek, 1979) and Job-Demands-Resources (Bakker et al., 2007) theories each provide a theoretical understanding of the relationship between the working environment and experiencing stress. Other theories, such as the process model of

[4] A '+' sign indicates a positive relationship and a '-' sign indicates a negative relationship between variables. A dotted line refers to a weak relationship

sickness absence (Gründemann & Vuuren, 1998) and the Organisational Health Research Model (Hart & Cooper, 2001), also provide an understanding of the relationship between the working environment, stress, coping styles and sickness absence. A common theme throughout these theories is that an imbalance or lack of fit between an individual and an aspect of their working environment may be responsible for increased stress, which leads to subsequent sickness absence. It may be these factors that require further investigation in relation to sickness absence.

Furthermore, theories that use sickness absence as a specific organisational outcome demonstrate a relationship between stress and sickness absence. The process model of sickness absence provides support for stress as a result of workload and inability to balance this demand and health problems. Additionally, the Organisational Health Research Model provides a broader overview of additional factors that may be influential in a range of organisational outcomes, including sickness absence.

2.4.3 Considerations for theoretical approaches to sickness absence

Theories surrounding sickness absence suggests there are two main approaches: the withdrawal hypothesis and the stress-reaction hypothesis. The withdrawal hypothesis focuses on the individual's voluntary withdrawal from the working environment as an explanation of sickness absence. Theories supporting the withdrawal hypothesis include motivation theories such as the conservation of resources and the attendance motivation theory.

In contrast, the stress-reaction hypothesis suggests sickness absence is an involuntary absence due to inability to attend work due to illness. Explanations of the physiological reaction to stress support the relationship between stress and sickness absence through experiencing illness. Moreover, occupational stress theories such as Person-Environment Fit, Effort-Reward Imbalance, Job-Demands-Control and Job-Demands-Resources provide further support for this hypothesis.

Both the withdrawal and the stress-reaction hypothesis each have limitations concerning the theoretical underpinnings of each perspective. On the whole, the majority of these theories are outdated, and none have been developed in the past decade. Siegrist and Li (2017) suggest working environments have changed over this period and have seen an increase in more flexible working patterns (such as zero-hour contracts), which has increased job insecurity. Additionally, Siegrist and Li suggest organisations are more focused on technology, which may affect the individual's working environment. As a result, the extent to which these theories account for this is unknown.

Moreover, Caldwell et al. (2004) criticised the measurements used in determining the fit between the person and their environment in the Person-Environment Fit theory. The assessment of fit is ultimately a subjective evaluation by an individual and may not be a reflection of the working environment as a whole. In particular, the P-E fit theory does not provide any clarifications as to the aspects of the working environment the individual misaligns with (Darrow & Behrend, 2017). Arguably, this has improved due to the creation of additional person-environment fits, such as demands-abilities. However, there are so many components of the working environment that offer a lack of fit between a person and their environment that research is yet to explore which lack of fit is more influential. Alongside this, the model lacks temporal validity because it does not consider how, or whether the lack of fit between the person and environment changes over time in an organisation (van Vianen, 2018).

Similarly, the Effort-Reward Imbalance Model has problems with the measurement of its constructs, particularly with the operationalisation of the term imbalance. Despite it being a subject of contention within the literature, Siegrist and Marmot (2004) suggest the imbalance is a ratio of 1 : >1, but a lack of studies have confirmed this, leading to a subjective measurement of 'imbalance'. However, the theory has been given credibility for considering the individual's subjective perspective of their working environment (Siegrist, 2017), which is something that the Job-Demands-Control theory fails to acknowledge.

The premise of the JD-C is that an individual will experience stress if faced with high demands and low control. However, it does not consider the notion that employees in this situation may not perceive high job demands and low control as problematic (Calnan et al., 2004). For example, the JD-C theory does not consider the impact on individual's coping styles, which may impact on their perception of the stressors as outlined within the Transactional Model of Stress and Coping (de Jonge & Dormann, 2017; Lazarus & Folkman, 1984). Similarly, the JD-C does not consider the impact of personality, for example, research has found that individuals with higher levels of self-esteem perceive job demands as less threatening (Parent-Lamarche & Marchand, 2019). Parent-Lamarche and colleagues suggested this was due to an individual having an increased confidence in being able to deal with stressors. This further highlights the need for Bakker et al.'s (2007) development of the JD-R model to consider the implications of factors that may affect stress, such as personality and coping styles.

Another criticism is that specific sickness absence models, such as the process model proposed by Gründemann and Vurren (1998), are linear. They approach sickness absence in a reductionist way and simplify the process of human behaviour, whereas there may be other components involved in sickness absence such as cognitive (e.g. decision-making),

psychological (e.g. perceptions) and sociological (e.g. cultural beliefs about sickness absence) factors that are excluded from these models but are present in others (e.g. Parson's sick role).

The differing perspectives of sickness absence could partly explain the limitations of these models. As previously discussed, there are several approaches to sickness absence such as epidemiology, economics, sociology and psychology. As a result, these approaches may have their theories on how and why sickness absence occurs. A good example of this is present within the Organisational Health Research Model (Hart & Cooper, 2001), which combines psychology (e.g. personality) with sociology (e.g. organisational climate) and has amalgamated a number of theories.

However, research has suggested that it is impractical to combine all of the perspectives of sickness absence into one theory (Allebeck & Mastekaasa, 2004), which may explain why there is a focus on explaining illness rather than sickness absence within some occupational theories. Instead, Kristensen (1991) suggested that a combination of individual, societal and national factors should be present within sickness absence theory to demonstrate its multifaceted nature. Therefore, one sickness absence theory may not be better than the other, but they each contribute their approaches to the concept.

2.4.4 Development of a theoretical framework

As discussed in Chapter 2, sickness absence may occur with or without disease, but it is the individual's experience of illness that can influence whether the sick role is adopted and whether subsequent sickness absence occurs (Alexanderson, 1998). Drawing on the definition of sickness absence by the Heart of England Trust (2010), illness, chronic conditions or accidents are reasons why employees engage in sickness absence. Arguably, sickness absence occurs due to health-related factors influenced by the individual's experience of illness.

This conceptualisation of sickness absence provided in this thesis aligns with the stress-reaction hypothesis, suggesting sickness absence occurs due to prolonged exposure to stress that causes ill-health and subsequent sickness absence (Schaufeli et al., 2009). This approach and the theories associated with it provides the most appropriate explanation for how an individual becomes ill or how a chronic condition deteriorates through exposure to stress. By reviewing the two approaches to stress (withdrawal hypothesis and stress-reaction hypothesis), it is evident that the stress-reaction hypothesis is the most appropriate framework for this thesis.

As previously stated, research into sickness absence originates from multiple disciplines including epidemiology, economics, sociology and psychology. Because of this, there are a

variety of different theoretical perspectives that help explain sickness absence in context of the stress-reaction hypothesis. For example, theories suggest sickness absence is a process (e.g. Gründemann & Vurren, 1998) or as an outcome (e.g. Bakker & Demerouti, 2007). Allebeck and Mastekaasa (2004) suggested that because of this, combining these theories into one theoretical model is not appropriate however, for the purpose of this research, it is important to look at the relationships between concepts and develop a model that highlights the proposed, theoretical relationship between the variables of interest. Further, as Kristensen (1991) highlighted, this must include a range of individual, societal and national factors.

The development of the theoretical framework consisted of considering the theories reviewed in section 2.4.2 relating to the stress reaction hypothesis. It is evident that the theories within this section highlight the multi-faceted nature of sickness absence and considers both psychological and occupational theories. Moreover, individual elements (such as misfit between the person and the environment), derived from pre-existing theories such as the Person-Environment fit, societal factors such as effort and rewards and national (or organisational factors) such as high demands and low control were included in the framework.

The theoretical framework (presented in Figure 9) therefore gives a summary and overview of how the stress-reaction hypothesis theories (outlined in section 2.4.2) can work in conjunction with one another to influence sickness absence.

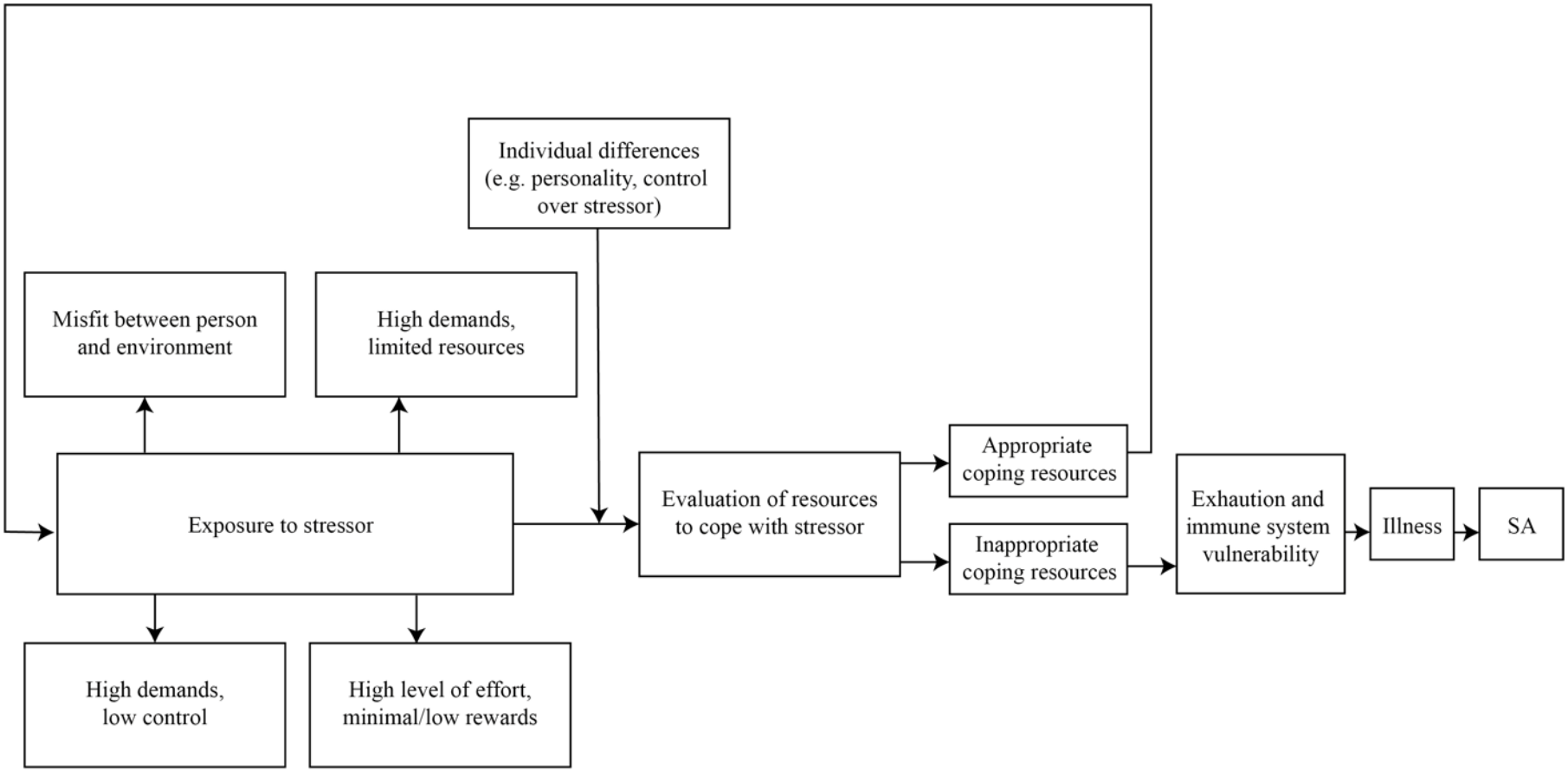


Figure 9. Theoretical framework for this thesis

The next section of this thesis will now move towards providing empirical evidence of the stressors that are present in the ambulance service.

2.5 Stress in the ambulance service

The previous section presented theoretical evidence for the stress-reaction hypothesis, which demonstrated that stress is an influential factor within sickness absence. To further understand the interaction between stress and sickness absence, this section will present a range of empirical research into stress in the ambulance service to determine the type and severity of stressors experienced.

Research has proposed that ambulance service employees report and experience a higher level of stress compared to the general population (Young & Cooper, 1995). In particular, Donnelly et al. (2012) found that ambulance employees experience occupational stress, which was a chronic stressor within the ambulance service due to its persistent and often enduring nature. Research has identified several causes of work-related chronic stress, such as a lack of managerial support; irregular working hours; shift work and a lack of resources (Bohström et al., 2017; Mahony, 2001; Sterud et al., 2011; Young & Cooper, 1995).

These chronic stressors also exist in addition to traumatic stress that personnel can experience after being exposed to a critical incident as a result of responding to an emergency (Avraham et al., 2014). Experiencing traumatic stress is expected as employees often have to deal with medical emergencies, reporting that fatalities and young patients are the most traumatic (Kleber & Van Der Ploeg, 2003). Furthermore, ambulance staff also experience daily work stressors, home stressors and hassles such as traffic and broken appliances, which can add to the level of stress experienced (Larsson et al., 2016).

2.5.1 Occupational stress in the ambulance service

Stress experienced as a result of the working environment can be categorised into two main sources; stress as a result of experiencing trauma (such as critical incidents) and stress as a result of the working environment (also known as operational stressors, such as workload and a lack of social support). This section will provide an overview of both traumatic and operational stressors that ambulance staff experience.

Critical incidents are an example of a distinct, traumatic stressor that ambulance personnel experience. Mitchell (1983) defined critical incidents as events that cause powerful emotional reactions that risk capacity to function, such as a threat to life. Front-line ambulance staff have provided examples of critical incidents within research, which include incidents involving

children and challenging emergency calls where the patient's life is in danger (Avraham et al., 2014). For call-handlers and dispatchers, critical incidents can include answering distressing 999 calls and feeling pressured to allocate the most appropriate resources (Barron et al., 2015).

Nirel et al. (2008) argues that critical incidents are an unavoidable part of the ambulance role. Early research by Regehr et al. (2002) confirmed this within a sample of 86 ambulance staff, in which all individuals had experienced a critical incident within their career. Boland et al. (2018) also found the most frequently encountered critical incidents included bodies of patients recently deceased (M = 38.53), observations of someone dying (M = 26.48) and notification of a patient's death (M = 18.01). Additionally, the most severe critical incidents included witnessing a murdered child (M = 3.46), a badly beaten child (M = 3.25) and causing a patient death (M = 3.20). These findings suggest that individuals who perceive critical incidents as severe, do not frequently encounter them. In contrast, critical incidents that occur frequently are not perceived as severe. This suggests that there may be a level of desensitisation from staff who become accustomed to critical incidents that occur frequently.

Despite the rarity of severe critical incidents, research has found that individuals who do experience severe critical incidents are at an increased risk of developing Post-Traumatic Stress Disorder (PTSD) (Simpson, 2013). In particular, a systematic review and meta-analysis by de Boer et al. (2014) found that critical incidents were positively associated with PTSD suggesting that as the number of critical incidents increased, the chance of developing PTSD also increased.

Among paramedics, Regehr et al. (2002) found that 25.5% of 86 ambulance workers suffered severe PTSD with 77.9% displaying mild or no symptoms of depression and 11.6% suffering from problems with alcohol as a result of a critical incident. However, research has argued that critical incidents may not have a direct relationship with PTSD. Declercq et al. (2011) found that PTSD was not associated with the number of critical incidents that an individual experienced, suggesting there are other factors that may predispose an individual to developing PTSD. For example, Bledsoe (2003) suggests that being exposed to trauma does not necessarily translate into PTSD symptomology, and instead, there are factors, such as genetics, that can predispose an individual's risk of PTSD.

Given that there is a heightened risk of developing PTSD due to experiencing trauma through critical incidents, there are a variety of steps in place within the emergency services to manage and prevent traumatic stress. Within the UK, when an individual is exposed to traumatic stimuli, an assessment tool entitled the Trauma Risk Management (TRiM) is used (Hunt et al.,

2013). This tool helps identify those who have experienced a traumatic event to understand and identify risk factors that may develop into traumatic stress or PTSD. It has been used extensively within the emergency services and is suggested to be a successful method that can help in reducing sickness absence rates as a result of experiencing traumatic stress (Whybrow et al., 2015). Similar intervention programmes also include the Critical Incident Stress Debriefing (CISD), or most recently known Critical Incident Stress Management programme (CISM) after experiencing a critical incident (Bledsoe, 2003).

Despite the research into critical incidents suggesting they are a cause of occupational stress, there are methodological weaknesses. The majority of critical incident research uses questionnaires such as the Critical Incident History Questionnaire (Weiss et al., 2010), which is inherently a subjective and biased method of gathering data on critical incidents. The experience of critical incidents can vary widely depending on factors such as age, experience and abilities to cope. For example, research has demonstrated that those who are younger, and newer to the service may not have the appropriate tools in place to cope with critical incidents (Smith et al., 2013). As a result, this may influence the frequency in addition to the severity of critical incidents they experience. Moreover, there is currently a lack of a methodology that allows for the comparison of the visual and auditory experience of a critical incident. Adams et al. (2014) stated that ambulance employees in 999 call centres are 'auditory witnesses' to critical incidents, but due to a lack of qualitative research into this, the extent to which this differs from the visual experience is unknown.

Although research indicates that critical incidents occur, severe incidents such as those outlined by Boland et al. (2018), are rare. As the participants did not perceive the most frequent critical incidents as severe, it could be argued that ambulance employees have built a tolerance for them. Furthermore, evidence also suggests it may be what attracts them to a job in the service (Nirel et al., 2008). It is, therefore, not surprising that some emergency service personnel perceive operational stressors (such as job demands) to be more stressful than critical incidents (Liberman et al., 2002). Alongside this, although severe critical incidents may put an employee at risk of developing PTSD, there are several measures in place to address this, such as the CISD and CISM programmes, that help staff when exposed to this type of stress. Arguably, support is currently in place for stress experienced as a result of severe critical incidents.

In addition to critical incidents, ambulance employees also experience a range of other organisational stressors that Liberman et al. (2002) termed operational stressors. These can include factors related to the working environment and are present in several occupational

theories of stress, including job demands (such as emotional, physical), workload, perceived control, responsibility and a lack of social support (Sluiter et al., 2003).

As previously discussed, job demands are defined as "physical, psychological, social or organisational aspects of the job that require sustained physical and/or psychological effort and are therefore associated with certain physiological and/or psychological costs" (Schaufeli & Bakker, 2004, p. 296). These can be further defined as anything that produces continued physical and psychological exertion and can arise from several areas of an individual's job.

Ambulance staff experience a variety of job demands such as emotional demands that arise due to medical emergencies and seeing distressed patients, physical demands, such as the need to lift heavy patients and equipment in addition to the demand of working long shifts (Sterud et al., 2011). Finally, there is a general demand on the service from the public to respond to emergencies, which is often referred to as workload in the literature (Association of Ambulance Chief Executives, 2011). This section will focus on the following operational stressors that have been identified in the ambulance literature: emotional and physical demands, workload, perceived control, responsibility and a lack of social support.

Ambulance personnel can suffer from a high level of emotional demands (Hansen et al., 2012; Sterud et al., 2008) stemming from the interaction and treatment of patients. In particular, research has found that situations such as resuscitation and dealing with patients' and relatives' emotions are the most challenging (Williams, 2013). Emotional demands are particularly stressful for staff as they feel the need to regulate their emotions so that their colleagues and patients do not perceive them as unprofessional (e.g. Weilenmann et al., 2018). Arguably, it is not experiencing emotional situations that are demanding, but it is the sustained effort to regulate emotions that is the most challenging.

Hanson et al. (2012) argued that experiencing heightened emotions and attempting to regulate these emotions can have a detrimental effect on an individual. Emotional regulation is an aspect of emotional labour, which is defined as inducing or concealing a feeling "in order to sustain the outward countenance that produces the proper state of mind in others" (Hochschild, 2003, p. 7). In other words, to regulate their emotions, ambulance staff need to regulate their emotional responses while expressing sympathetic and compassionate emotions towards the patient and their families (Martínez-Iñigo et al., 2007). This has several consequences for individuals as emotional demands have been shown to predict stress, reduce well-being (Taris & Schreurs, 2009) and is also associated with burnout (Zapf et al., 2001). Similarly, Gevers et al. (2010) argues that experiencing emotional demands impacts the ability to work in a team,

which could be detrimental in an emergency. Therefore, emotional demands are not only harmful to employees but also potentially dangerous for patients.

Alongside experiencing emotional job demands, ambulance staff also experience physical demands. Coffey et al. (2016) suggest physical demands include lifting patients and carrying heavy equipment. Physical demands can also go beyond lifting and include providing medical interventions, such as cardiopulmonary resuscitation (CPR) (Fischer et al., 2017) and long working hours as a result of shift work and overtime (Roelen et al., 2013). Aasa et al. (2005) found that there was a link between physical demands and the physical health of an individual. In particular, ambulance staff who experienced physical demands had injuries within the neck, shoulders and lower back.

One of the first studies into ambulance sickness absence highlighted that the physical nature of ambulance work led to frequent musculoskeletal injuries (Stilwell & Stilwell, 1984). However, research into the impact of physical demands on ambulance employees have been critiqued for their sole focus on front-line staff who lift patients rather than call centre or dispatch staff who are seated for the duration of their shift. More recently, Baker et al. (2018) found that being seated at a desk also presents opportunities for physical demands to occur, such as physiological changes in the body. This is changing; however, with research currently being conducted into the wellbeing of ambulance call centre staff in the United States (e.g. Baseman et al., 2018).

Arguably, one operational stressor that is consistent across the ambulance service is workload. Moray (2013) suggests there are two components to workload. The first is the amount of work an individual is required to do, and the second is the effectiveness or performance of this work. Therefore, when considering workload as a job demand, focus is on the amount of work and the quality of this work.

Ambulance workload stems from the increasing number of emergency calls that the service receives and respond to (Victor et al., 1999). Morse (2017) suggested that the ambulance service responds to approximately 6.6 million incidents per year. Additionally, calls to the service have increased by 18% since 2011(Kay, 2019), suggesting that demand for the service has never been so high.

Early investigations into ambulance workload determined that at least 40% of the calls received could be directed to other services such as social services or primary care (Victor et al., 1999). To combat this, NHS 111 was introduced to offer urgent medical advice to patients for non-life-threatening conditions. However, despite NHS 111 now being an established service in the

NHS, there is no evidence of a decreased ambulance demand or workload (Turner et al., 2013). Turner and colleagues found a 2.9% increase in ambulance incidents with the implementation of NHS 111. This suggests that although the support services are in place to deal with medical problems that do not require an ambulance, the public still require the ambulance service.

To identify why this may be the case, Booker et al. (2014) conducted a systematic review and identified that patients' calls to the ambulance service are influenced by their symptoms in addition to their emotional responses. For example, if patients' have negative emotional responses, they are more inclined to call the ambulance service. Moreover, Booker and colleagues found that patients call ambulances as part of their process to legitimise their illness and suggested that they are often conflicted when faced with the decision of which healthcare provider to utilise. Overall, despite other services attempting to minimise the demand on the ambulance service, there is evidence to suggest there are other factors involved, such as the patients' needs and emotional disposition that result in a continued high workload for ambulance employees.

One element of the ambulance workload that employees find challenging is the quality of the work, which is often assessed using targets, such as the ambulance quality indicators. Before the introduction of new ambulance quality indicators in 2017, Wankhade (2011) suggested that a focus on meeting targets is "a response to the call, not to the patient" (p. 397). Since then, a focus has been bought to include a wider number of targets including clinical outcomes (such as measuring rates of stroke and sepsis) including average response times and conveyance to hospital (Coster et al., 2018).

Originally, the response target for a category 1 (or life-threatening) call was 8 minutes; now ambulance services aim to respond to category 1 calls in 7 minutes (Durham et al., 2016). In June 2019, NHS England (2019) reported that, on average, category 1 calls were responded to in 7 minutes and 11 seconds, slightly above the target. However, this provides a good indication of the types of targets that operate in the ambulance service.

Granter et al. (2019) suggested that meeting these response targets increases the intensity of ambulance work whilst an inability to meet targets could lead to dismissal. Granter and colleagues also highlighted that these pressures run parallel to ensuring high standards of patient care. Therefore, it is no surprise that research has highlighted several consequences of a target-driven ambulance service.

In particular, the literature has demonstrated that targets are responsible for causing friction between road and control staff. Adams et al. (2014) noted that road staff did not feel supported

by control and vice versa. One participant in the study stated that "paramedics, urmm, aren't very thankful for us…they see us as their punching bags… so you don't get a lot of support [from them], (Participant 13, Male)" (p. 439). Adams and colleagues found that staff on the road perceive that control room staff do not fully understand the medical situation and may send the nearest resource, rather than the most appropriate to meet the response target. This means that staff who are finishing their shift may be called to another job, which staff find frustrating (Granter et al., 2019) . In addition to targets impacting the relationship between employees, there can be a profound impact on the health of an individual. Price (2006) found that deploying ambulances to certain areas to meet targets, also known as a standby, had negative consequences for health. In particular, participants reported back pain, inability to access basic needs (such as toilets) and an increased risk of violence if stationed individually.

Overall, it is evident that ambulance staff feel pressured to meet performance targets which are considered an essential part of working in organisations that deliver a service (Mauya, 2015). However, the majority of research surrounding the impact of target-driven ambulance services focuses on research before the new ambulance quality indicators. Although there has been a decrease in response time target, 8 minutes to 7 minutes and the introduction of a new triage system (Nuffield Trust, 2019), there is a lack of research evaluating the new quality indicators introduced in 2017. Nevertheless, as the ambulance service is still operating in a target-driven organisation, it could be argued that some of the issues discussed above may contribute to their experience of an intense workload.

In addition to a heavy workload, the ambulance service is viewed as an organisation low in control because front-line staff cannot choose the calls they respond to or answer (Regehr & Millar, 2007). However, research has argued that employees, particularly in the dispatch or call-taker role, assert control through guiding patients through medical interventions.

Adams, Shakespeare-Finch and Armstrong (2014) provide an example of this where a patient was giving birth, and the ambulance employee provided medical advice to the patient. Within their study, Adams et al. (2014) highlighted that although staff do have opportunities to control their situation, the challenge of having full control over the working environment remains.

In addition to a lack of control over emergency calls, ambulance staff state they have limited control over their shift work (Pisarski et al., 2002). An inability to control working hours can produce conflict between the working environment and their home life, leading to increased stress (Loudoun & Bohle, 1997). Overall, the literature points towards several aspects of the working environment that ambulance employees have limited control over.

As previously discussed, the Job-Demands-Control model (Karasek, 1979) suggests a lack of control within the workplace is linked to an increased likelihood of experiencing stress and health problems (Jex & Kain, 2010). A systematic review conducted by Van der Doef et al. (1999), found that employees in high demand-low control working environments experience negative psychological wellbeing. In particular, low control was a risk factor for anxiety and depression (Sanne et al., 2005).

Despite theory and research suggesting that low control over the working environment has physical and psychological implications for an individual, research suggests that there is a lack of evidence to suggest an appropriate level of control required for an individual to function effectively at work (Tenhiälä et al., 2013). Moreover, this empirical and theoretical research lacks understanding as to how personality and an individual's locus of control relates to physiological and psychological outcomes.

For example, Rotter (1966) suggested individuals who perceive their outcomes (e.g. performance, failure or success) to be controlled by chance or other individuals, have an external locus of control. Within the ambulance service, individuals with an external locus of control report increased levels of stress compared to those with an internal locus of control (James & Wright, 1993). This suggests that if an individual attributes their performance or success as being controlled by chance, they are more likely to experience stress.

As a result, personality factors such as a locus of control may influence the individual's perception of control within their working environment. Although research suggests that a lack of control over the workload and working environment is detrimental to employees, these studies fail to consider the influence of factors such as locus of control.

Alongside this, the literature reports that responsibility is also an operational stressor for ambulance employees (Martin & Wall, 1989). Responsibility is defined as "feeling personally accountable and responsible for the results of work he/she does" (Hackman & Oldham, 1976, p. 256). It has been long established that high levels of job responsibility are a major stressor for healthcare workers (e.g. Menzies, 1960). This is due to employees holding a sense of responsibility for their patients and the care that they provide them (e.g. Johansson et al., 2013). In particular, the ambulance service work alongside critically ill patients who are vulnerable and work within a time-critical situation (Roberts et al., 2015). Roberts and colleagues argue this is also present amongst call takers and dispatchers who have a responsibility to triage and send the most appropriate resources quickly.

Responsibility is seen as a stressor as research argues that responsibility requires prolonged effort and attention, which increases the risk of becoming exhausted (Oppenauer & Van De Voorde, 2018). Research has identified that within the ambulance service, stress caused by a high level of responsibility stems from confidence in their abilities to make decisions and carry out appropriate medical interventions (Hörberg et al., 2017). As a result, if employees are concerned about their decision making and application of medical knowledge, they may feel increased levels of responsibility (Svensson & Fridlund, 2008). Therefore, it could be argued that individuals who are newer to the service or those who lack confidence in their skills, may feel increased stress due to percieved high levels of responsibility.

One problem with research into responsibility is that there is a lack of evidence identifying the effects of high levels of responsibility on employees in the ambulance service. Despite this, research suggests that two-thirds of the staff are unhappy with their level of pay for the responsibility that they experience (Quaile, 2016). Arguably, it may not be the high level of responsibility that is the main source of stress but perhaps the feeling of being undervalued for the high level of responsibility they have.

Evidence suggests there are multiple operational stressors that ambulance employees experience, which result in staff experiencing increased levels of stress. These stem from the physical and emotional demands of ambulance work in addition to an intense workload, a lack of control and high levels of responsibility. In addition to these, research has also identified that a major stressor within the ambulance service is a lack of social support.

Cobb (1976) suggested social support consists of an individual perceiving they are "cared for and loved… esteemed and valued" in addition to an individual perceiving that they "belong to a network of communication and mutual obligation" (p. 300). The literature has identified several sources of social support in the ambulance service, including family, friends, colleagues and management (Donnelly et al., 2016).

Cutrona and Suhr (1992) developed a typology of social support and suggested that there were five main types including informational, emotional, esteem, social network support and tangible support. Informational support refers to social support in the form of advice and feedback whilst emotional support refers to an individual expressing emotion towards another individual (for example, by expressing concern). Esteem refers to social support that builds confidence in an individual, their skills and abilities. Moreover, social network support concerns the communication with members of a specific group and tangible social support is

related to physical help and resources, such as offering an individual money if they are struggling financially.

Social support is suggested to be an effective method of coping with stress and is a crucial factor for increasing workplace wellbeing due to the development of relationships between colleagues (e.g Barnett et al., 2019). The element of social support is present within multiple occupational stress theories such as the Job-Demands-Resources model (Bakker & Demerouti, 2007), which suggests social support is a buffer on job demands. This is extensively supported within the research, with studies identifying social support as a protective factor in reducing stress and burnout amongst ambulance workers (Setti et al., 2018).

In contrast, research has also focused on the implications of receiving a lack of social support. For example, Kleber and Van der Ploeg (2003) found that a lack of social support and inadequate communication within the ambulance working environment was a strong predictor of stress. This highlights that the social environment may play an important role within stress. In particular, Sterud et al. (2008) found that low levels of social support increase the severity of the stressor. Sterud and colleagues further suggested that this was due to employees feeling unsupported leading to a perception that they are unable to cope effectively.

With regards to sources of support in the service, Dodd (2017) suggests there are several sources of support including formal Trauma Risk Management (TRiM), Peer to Peer support (P2P) and a Pastoral Care Workers Service (PCW). This is in addition to informal sources of support from colleagues and management, such as "having a cup of coffee and a chat" (Hugelius et al., 2014, p. 591). However, Adams et al. (2014) highlight that there are barriers to accessing these types of formal support, such as the culture within the ambulance service and the time required to engage in conversation. As previously discussed, the staff report feeling hesitant to express emotions due to the fear of being 'unprofessional' (Steen et al., 1997). Moreover, staff have a high and intense workload, which could prevent them from being able to spend time talking to other colleagues. Therefore, employees may be resistant to access support due to these factors.

With regards to support between colleagues, Gouweloos-Trines et al. (2017) identified that ambulance employees perceive higher levels of support from their peers rather than management. Inadequate management support included a lack of time for in-depth conversations and a perception that management was uninterested in their employees (Nordby, 2015). Moreover, NHS Employers (2017) suggested that a key to preventing and managing sickness absence is "good support" (p. 4) from management. This is problematic because

research has found benefits of being support by management, with participants reporting better mental health than those who were not supported by management (Petrie et al., 2018). Overall, this suggests that despite good management support being an important factor for the wellbeing of employees, ambulance staff perceive management support as inadequate.

However, from a management perspective, Hugelius et al. (2014) found that managers were motivated to support and protect their employees. This suggests that although employees perceive management support as inadequate, managers feel they are supportive. One explanation for this comes from Hugelius et al. (2014), who found that management was concerned that if they were too supportive it would come across as patronising and insincere. In addition, Carter (2018) reported that line managers may not always have access to information, such as sickness absence or clinical performance data. This may suggest that if employees are seeking specific advice regarding absences or their performance at work, line management may be hesitant to provide this type of support. As a result of this, it could be suggested that management may not be providing adequate support to their employees due to their own fear of being 'over-supportive' and having an inadequate level of information about their employees, despite being willing and motivated to deliver support.

Alternative sources of social support are obtained from individuals outside of the ambulance service, such as friends and family. Donnelly et al. (2016) found that ambulance employees prefer the support of family and friends. However, previous research has highlighted that upholding familial relationships may be difficult in emergency service roles (e.g. Jackson et al., 2006). Although this has not been fully explored within the context of the ambulance service, Mildenhall (2012) suggests this is due to the reluctance of ambulance workers to share the details of their role and the stressors they have experienced with family and friends. Therefore, despite a preference for support from family and friends, there may also be barriers in accessing this support.

The majority of research into social support and stress measures the perception of social support rather than whether or not social support was received. For example, Soh, Zarola, Palaiou and Furnham (2016) provided evidence to suggest that the perception of social support is more important than whether social support was actually received. According to Soh and colleagues, perceptions were more influential factors because they strengthened the employee's belief that the workplace cares about their wellbeing.

Overall, it is evident that a lack of social support in the workplace stems from these negative perceptions and several barriers. With regards to barriers, research highlights that a lack of time

and a fear of being unprofessional is one explanation for lack of social support in the ambulance service (Steen et al., 1997; Adams et al., 2014). Moreover, a reluctance to share details of stress with friends and family forms another barrier for social support outside of the service (Mildenhall, 2012). Additionally, there are barriers for management, including the fear of being 'over-supportive' and insincere (Hugelius et al., 2014). With relation to the perception of social support, the literature suggests employees within the ambulance service have a negative perception of social support (e.g. perceiving managers as uninterested) (Nordby, 2015). As a result, it is evident that a lack of social support may exist within and outside of the ambulance service and serves as an additional stressor for ambulance personnel (e.g. Kleber & Van der Ploeg, 2003).

There is extensive research identifying that job demands such as physical and emotional demands, workload, lack of control and responsibility, in addition to a lack of social support are stressors in the ambulance service. However, one flaw with research into the effects of physical demands on ambulance employees fails to consider the impact of technology to minimise physical demands on staff. It could be argued that advances in technology have reduced physical demands in the ambulance service and are therefore no longer a major source of stress (e.g Gilad & Byran, 2007; van der Molen et al., 2005).

Also, there is a lack of research that combines job demands as studies tend to focus exclusively on one or two job demands (e.g. van Schaaijk et al., 2017). Therefore, research is unable to establish which job demands, if any, are more detrimental to ambulance staff than others. This is one of the major flaws of stress research, as because there are so many factors involved, research is unable to pinpoint the factors that may be more influential in stress. Otherwise, effective interventions could be targeted towards these main sources of stress to reduce their impact and influence.

In addition to experiencing stress within the workplace, ambulance staff also experience everyday stressors, that are not related to their work. Within the literature, these types of stressors are termed daily hassles, which are defined as "minor negative experiences which occur quite frequently on a regular basis" (Stefanek et al., 2012, p. 202). Examples of daily hassles include traffic and broken appliances, domestic responsibilities and financial concerns (Larsson et al., 2016).

In particular, the literature discusses the effect of 'double-exposure', which relates to experiencing domestic responsibilities (such as caring for children and household chores) and stress at work (Krantz & Ostergen, 2001). Krantz and Ostergren found that this double

exposure decreased health status and increased the risk of common illnesses such as stomach pains and headaches. Moreover, financial concerns at home are also related to health problems (Krishnakumar et al., 2014), which aligns with theories surrounding stress.

Therefore, research suggests a spillover effect between the work and home environment and vice versa. For example, several life experiences have the potential to manifest themselves in the working environment (Ragins, 2008). Ragins et al. researched this effect within the context of home foreclosure. They found that this particular life event was impacting the perception of stress at work, suggesting that home life was 'spilling over' into the working environment. This has also been supported by Tuttle et al. (2018), who found that stress at work, such as emotional and career demands, impacted relationships with spouses in a sample of police officers. Therefore, it is important to consider daily hassles and stressors that occur in everyday life to gain a holistic understanding of the relationship between stress and sickness absence.

This section provided an overview of traumatic, operational and everyday stressors that ambulance employees experience. In order to fully understand the relationship between stress and sickness absence, it is important to now consider the consequences of stress on the individual.

2.5.2 Consequences of stress

There is a plethora of evidence to suggest that ambulance employees have the potential to experience a high level of stress within their working environment (Mildenhall, 2012). Therefore, it is important to consider the impact that stress may have on the individual[5].

Performing under high-stress conditions has been found to risk patient safety, particularly when employees are asked to perform drug dose calculations. LeBlanc et al. (2005) asked paramedics to make a drug dose calculation in a high-stress and low stress situation. Paramedics in the low-stress condition were able to make more accurate drug dose calculations than in the high-stress situation. Therefore, suggesting that highly stressful conditions may impact the cognition related to calculating drug doses.

LeBlanc and colleagues were able to demonstrate a link between performance and stress, suggesting that paramedics are better able to perform when experiencing low levels of stress. However, this study raises questions as to whether the task (the drug calculation) or the stress-

[5] Arguably, sickness absence is a consequence of experiencing stress, but this will be discussed in further detail in section 2.7

inducing environment (such as increased noise level) caused the inability to calculate accurate drug doses. For example, participants may have felt additional pressure knowing that they were part of a research study that was asking them to calculate drug doses. Nevertheless, this study has drawn interesting conclusions surrounding the relationship between stress and performance within the ambulance population.

As previously discussed in section 2.4.2, stress has a profound impact on an individual's physiological and psychological wellbeing. Theoretical underpinnings of stress, such as Selye's General Adaptation Syndrome, have demonstrated the effects of stress on physiological systems, such as the immune system. This has been further supported by research, which has demonstrated the impact of the secretion of the stress hormone cortisol on the performance of white blood cells, preventing them from attacking pathogens that enter the body (Segerstrom & Miller, 2004). Moreover, psychological and occupational theories of stress have focused on an individual's interpretation of the stressor leading to strain and ill health (e.g. Siegrist et al., 1986).

The psychological effects of stress exposure include an increase in mental health problems such as anxiety, depression and post-traumatic stress disorder (PTSD) (Garbarino et al., 2013). As outlined in section 2.5.1, PTSD is often associated with experiencing critical incidents.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5), categorises PTSD through a series of criteria. These include the stressor itself, the presence of intrusive thoughts, reactions such as flashbacks, avoidance of stressful stimuli, alterations in mood or cognitive impairment with symptoms lasting longer than one month (American Psychiatric Association, 2013). In particular, Bennett (2004) found that 22% of 617 participants from the UK's ambulance services suffered from PTSD with 1 in 10 participants experiencing clinical depression. The existence of PTSD among ambulance staff was also identified by Petrie et al. (2018) who conducted a meta-analysis and found high levels of PTSD for ambulance staff worldwide. However, Petrie and colleagues also found evidence of a reduction of PTSD in recent decades, which they explained was due to the increasing awareness of mental health in the workplace. Despite these findings, it is evident that ambulance employees are at an increased risk of mental health problems due to stress exposure in their working environment, such as anxiety, depression and PTSD.

Historically, research has focused on the negative consequences of stress, such as the literature outlined above. However, there is theoretical and empirical evidence to suggest that a moderate

level of stress can have a positive effect on individuals. In particular, Yerkes and Dodson (1908) found that there was an optimal level of mental arousal for performance.

The Yerkes-Dodson law, as it is most commonly known, can be represented using a graph (Figure 10) (Cohen, 2011). The performance curve suggests that as arousal (stress) increases, performance initially improves but at a certain point deteriorates showing experiencing too much stress has a negative effect on performance. It is this level of optimal stress that Selye (1976) coined 'eustress'. Overall, eustress has been used in the literature to describe a positive approach to stress (Gibbons et al., 2008).

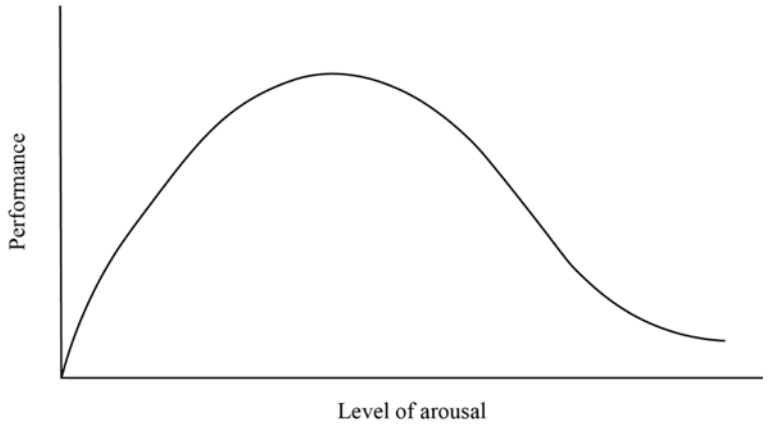


Figure 10. Yerkes and Dodson (1908) performance curve reproduced from Cohen (2011)

Despite this evidence, Le Fevre et al. (2003) noted that the original Yerkes and Dodson study was conducted on mice rather than human participants, which casts doubt on the applicability of the theory to humans. In addition, Le Fevre and colleagues argued that the terms 'performance' and 'stress' do not appear in the original article, suggesting that its application to occupational psychology is theoretical rather than empirically supported.

Moreover, there are limitations in applying the Yerkes-Dodson law to humans as evidence suggests individuals with anxiety disorders can sustain a high level of performance, despite experiencing a high level of stress (Mellifont et al., 2016). Anxiety and stress are similar in this context because both states occur when an individual perceives a threat in their environment, which triggers a similar stress response (Craske & Stein, 2016). Therefore, the research suggests that perceiving a threat in the environment does not necessarily have an effect upon an individual's performance. As seen with LeBlanc et al. (2005), the inability to calculate an accurate drug dose calculation may not have been due to experiencing stress, further highlighted that there may be other factors involved, which may affect their performance.

Nevertheless, there is evidence to suggest there are positive outcomes when exposed to stress. In particular, research has found a strong relationship between stress exposure and increased resilience (Dooley et al., 2017). This is particularly noted amongst those in high stress roles, such as military personnel. McLean (2013) found that individuals exposed to combat and medical-related stressors demonstrated higher levels of post-traumatic growth (PTG).

PTG is a term used to describe a "positive psychological change experienced as a result of the struggle with highly challenging life circumstances" (Tedeschi & Calhoun, 2004, p. 1). Research into PTG among firefighters found that PTG is a viable outcome for emergency service workers due to their high level of exposure to stress and trauma (Armstrong et al., 2014). Similar findings have also been found amongst ambulance personnel who stated that PTG had occurred and provided them with a new appreciation of life (Shakespeare-Finch et al., 2003).

However, research into PTG can be criticised for focussing on growth and resilience after traumatic events rather than chronic, occupational stressors. As a result, it cannot be determined whether PTG would occur after exposure to workplace stressors, such as workload or a lack of control. Moreover, there is a lack of understanding as to how long an individual is required to experience the stressor in order to achieve increased growth and resilience.

The positive consequences of stress, such as increased performance and resilience, have been widely critiqued. Therefore, providing no concrete evidence to suggest that experiencing stress has positive outcomes for individuals. The majority of research that aims to identify the consequences of stress focuses on the negative outcomes, such as the relationship between stress and ill health in addition to poor performance. Therefore, providing stronger empirical and theoretical support for the notion that stress has a negative impact on an individual.

2.5.3 Summary of stressors in the ambulance service

Research has identified that there are several occupational stressors in the ambulance service. In particular, the literature defines these as traumatic stressors, which refer to critical incidents (Avraham et al., 2014) and operational stressors, which refer to the factors related to the working environment (Liberman et al., 2002; Sluiter et al., 2003). Outside of the ambulance role, staff may also experience additional stressors in their personal lives. These include domestic responsibilities and financial concerns (Larsson et al., 2016) that may spill over into the working environment (e.g. Tuttle et al., 2018).

Job demands within the ambulance service stem from experiencing physical and emotional demands in addition to increased workload, a perceived lack of control and high levels of responsibility. As previously discussed, technology has minimised physical demands within the ambulance service and arguably is an area that does not need further research. Additionally, emotional demands, similarly to critical incidents, are an unavoidable part of the ambulance role, due to the involvement with critically ill patients (Nirel et al., 2008). Therefore, operational stressors, such as workload, control, responsibility and a lack of social support are factors that can be improved or changed within the service to encourage a more positive working environment. Additionally, ambulance employees report operational stressors as being more stressful than traumatic stressors, such as critical incidents (Liberman et al., 2002). Because employees perceive operational stressors as the most stressful, with the idea that they are avoidable, it is these operational factors that this thesis will focus on in relation to sickness absence. Moreover, external stressors, such as those experienced at home and in everyday life, are also essential to the wellbeing of staff within the service

A recent systematic review by Lawn et al. (2020) suggested that traumatic stress is present amongst workers but is amplified by how colleagues and management respond to this stress. This further suggests that the stress an ambulance employee may experience does not stop at the exposure to stress but the reactions of the stressful situation from others.

As exposure to stress is something ambulance staff experience in all areas of their life, it is crucial to understand how staff cope and overcome these stressors. Therefore, the next section of this literature review will focus on coping styles and strategies that are used to overcome stress.

2.6 Coping with stress

Coping refers to "the cognitive and behavioural efforts made to master, tolerate, or reduce external and internal demands and conflicts among them" (Folkman & Lazarus, 1980, p. 23). In essence, coping is used to combat stressors using either cognitive or behavioural methods.

Coping is considered as a resource and an individual characteristic. Moos and Holahan (2003) considered coping as a resource where individuals can draw on multiple behaviours and actions rather than one, specific behavioural response to reduce stress (Skinner et al., 2003). In contrast, coping is also conceptualised as an individual characteristic, which is consistent over time and across stressors (Carver & Scheier, 1994). These individual characteristics of coping are also referred to as coping styles, which consist of a combination of an individual's personality, locus of control and perception of the stressor (Sahler & Carr, 2009). However, due to the complexity

of human behaviour, Folkman and Tedlie (2004) highlight that there are no specific rules on whether to consider coping a resource or characteristic.

It could be argued that coping is a characteristic as it aligns with theory suggesting that coping is based on an individual's appraisal of the situation, as outlined in the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984). Furthermore, Folkman and Tedlie (2004) highlight that coping is influenced by several factors including the type of demand, the resources available and personality. Therefore, one individual's method of coping with stress may differ to that of another individual. As a result, this thesis will consider coping as an individual characteristic through coping styles, as these provide a set of individual, cognitive and behavioural factors that can provide an overview of how an individual typically copes with stress (Coppens et al., 2010). However, it is important to note that these coping styles also include several behavioural responses that are associated with each coping style. For example, emotion-focused coping may utilise behaviours such as denial.

Folkman and Lazarus (1980) suggests that the two main coping styles are problem-focused and emotion-focused coping. According to Folkman and Lazarus, problem-focused coping (also known as active or rational coping) concentrates on how individuals can change the stressful event by seeking information or problem-solving. On the other hand, emotion-focused coping focuses on how individuals can change the way they think or feel about a stressful event, either through denial or emotional responses. Lazarus and Folkman (1984) further stated that when an individual perceives a stressor as unchangeable, or they have minimal control over its outcome, they will engage in emotion-focused coping. Conversely, when the stressor is changeable or controllable, an individual will utilise problem-focused coping.

In addition to problem-focused and emotion-focused coping styles, the literature also points towards two other styles of coping: detached and avoidance. Detached coping styles refers to strategies that individuals' use to cognitively distance themselves from a stressor (Elklit, 1996). For example, diverting attention from the stressor is a strategy of detached coping used by a sample of psychiatric nurses to prevent emotional exhaustion as a result of organisational stressors (McTiernan & McDonald, 2015). Moreover, avoidance coping styles refer to strategies that individuals use to avoid particularly stressful situations, thoughts or feelings (Chang et al., 2006). For example, Marmot (1995) and Mildenhall (2012) argued that sickness absence is used as an avoidant coping mechanism to cope with stress.

Within each of these coping styles, there are specific behaviours and actions that individuals engage in to cope with stress. In the following section, these coping styles will be explored in

more detail to determine their effectiveness in being able to reduce or tolerate the effects of stress.

2.6.1 Coping styles

As previously discussed, there are several coping styles that are recognised within the literature. These are problem-focused coping, emotion-focused coping, detached coping and avoidance coping. This section will provide an overview of these four coping styles in addition to providing a critical insight into the coping styles and associated strategies present amongst ambulance employees.

Problem-focused coping styles consist of active coping behaviours that target the stressors directly (Lazarus & Folkman, 1984). For example, seeking instrumental social support (such as asking for assistance and service) is suggested to be one of the most effective problem-focused coping strategies to cope with stress (Ozdemir & Arslan, 2018). Early research into problem-focused coping by Daniels and Guppy (1994) proposed that social support is a problem-focused coping strategy as it stems from the individual seeking and receiving advice and guidance from others.

Research has identified many positive aspects of using social support to cope with stress. For example, social support from co-workers have reduced levels of work-related stress within a sample of nurses (AbuAlRub, 2004). Moreover, social support from family and friends is also effective in reducing levels of stress and serves as a protective factor for the individual (Donnelly et al., 2016). This suggests that seeking assistance from individuals inside and outside of the workplace could be beneficial in coping with stressors. Problem-focused coping is a method utilised among ambulance staff to cope with stress. In particular, Essex et al. (2008) found that a widespread strategy included speaking to friends and family.

However, Bounds (2006) has argued that staff in the ambulance service often deny that they are psychologically or physically affected by stress and demonstrate a front of bravado. Moreover, employees may be reluctant to seek support from friends and family due to the inability to discuss traumatic details of incidents (Avraham et al., 2014). These factors may present themselves as barriers to employees who want to seek social support and has implications for using problem-focused coping. For example, staff have to first admit they are affected by stress before seeking out practical methods of overcoming it, which could be impacted by maintaining bravado. Furthermore, these barriers have implications for research into coping as ambulance staff may not disclose their true levels of stress or coping strategies to researchers to protect themselves and their identity as a member of the ambulance service.

Despite research suggesting that problem-focused coping is the most effective coping strategy, some researchers have found certain strategies to be ineffective. For example, the use of overworking (i.e. working before or after work to complete tasks) as a problem-focused coping strategy has been linked to a variety of negative health outcomes, including cardiovascular disease and the suppression of the immune system (Siegrist & Li, 2017). This suggests that there may be some problem-focused coping strategies that harm an individual's ability to cope with stress.

Moreover, research has argued that not all individuals may be predisposed to use problem-focused coping styles. Kazemi et al. (2015) argued that an individual's locus of control (LOC) (Rotter, 1966) is an influential factor in whether or not individuals use problem-focused coping. Kazemi et al. (2015) suggested that individuals who have external LOC and believe they lack control over a situation, are less likely to use problem-focused coping strategies, such as seeking instrumental social support. This evidence suggests that although problem-focused strategies are effective, not all individuals will use them.

On the other hand, individuals may use emotion-focused coping strategies by changing the way they think or feel about a stressful event through denial or emotional responses, such as crying or expressions of anger (Folkman & Lazarus, 1980). Traditionally, research has considered emotion-focused coping maladaptive and ineffective as they do not actively deal with the stressor (Holton et al., 2015). Ben-Zur and colleagues (2007) argued that strategies, such as denial, increase depersonalisation, where individuals distance themselves from their thoughts, feelings and emotions. However, research argues that this approach may be beneficial to some individuals. For example, Gomes (2013) identified that emotion-focused coping strategies, such as denial, are common among healthcare professionals. Roth et al. (2017) suggested this was because strategies such as denial help staff to cope in the short-term with the emotional responses to patients. In their research, Mann and colleagues (2004) suggested this was because healthcare staff are required to manage their emotions whilst working so that they can express appropriate and professional emotions to patients and their families. From this, it is apparent that some elements of emotion-focused coping may be situation-dependent and may be beneficial for healthcare staff to use when exposed to stressors related to their job role.

Despite this, the use of emotion-focused coping is influenced by the number and intensity of stressors experienced. For example, Trouillet (2011) found that the use of emotion-focused strategies increased if individuals perceived stressors as more intense or if there were a lot of them. The intensity and frequency of stress, therefore, suggest that individuals may use

emotion-focused coping strategies if they feel overwhelmed as a short-term and 'in the moment' coping strategy.

The research into emotion-focused coping indicates that these types of coping behaviours can both be beneficial and harmful for individuals. It is this mixture of evidence that is problematic within research surrounding emotion-focused coping. For example, research has identified that using an emotional expression such as anger is not an effective coping mechanism (e.g. Pittman, 2011). However, Can and Hendy (2014) argue that the suppression of anger is what makes emotion-focused coping ineffective. Moreover, emotional responses, such as crying, have also elicited similar results with regards to the ineffectiveness of emotion-focused coping. Sharman et al. (2019) found that crying did not allow individuals to cope for longer and did not lower levels of stress hormones, such as cortisol. These findings support the notion that emotional responses are not effective in coping with stress. However, as Sharman et al. (2019) focused on moderate levels of stress, these is no evidence to suggest whether crying may have an effect on low or high levels of stress. This suggests that there may be additional, underlying factors related to emotion-focused coping, such as the situation these coping strategies take place in, that may influence the effectiveness of emotion-focused coping (e.g. Cullati et al., 2017).

Another coping style within the literature is detached coping, which occurs when an individual is able to re-frame a stressor as "separate from oneself and not taking things personally" (Sulkowski et al., 2011, p. 189). Sharma and Kumar (2016) argue that detached coping is an effective coping mechanism as it allows individuals to emotionally remove themselves from a stressor in order to deal with it effectively.

Detached coping styles have been researched in relation to bereavements and have been successful in helping an individual accept the loss of a loved one (Kamp et al., 2019). Furthermore, research into occupational stress within sports professionals found that emotional detachment was beneficial and promoted positive emotions towards participants' job roles (Balk et al., 2019). However, other research has not found any benefits of engaging in detached coping. For example, Dolan et al. (2012) found that within their population of nurses, some used detachment as a method of coping. However, the participants did not perceive detachment to be an effective method of coping, due to the risk of not seeing patients as real people. Therefore, Dolan and colleagues highlight that there should be a focus on emotional distancing rather than detachment altogether.

The evidence into detached coping above suggests a common factor in relation to whether detached coping is effective or not. It could be argued that the type of job role an individual engages in depends on whether detached coping is effective. The research conducted into healthcare professionals is focused on detachment from the emotional responses to patients and there is limited evidence to suggest whether detached coping could be useful on more general workplace stressors, such as workload. Overall, detached coping serves as an area for further exploration.

Early research into ambulance coping styles by Regehr and colleagues (2002) identified that ambulance employees use detached coping mechanisms, such as emotionally distancing themselves from stressors. As previously stated, the use of emotional distancing can be useful when managing emotions surrounding patients (e.g. Steen et al., 1997), however the effectiveness of this coping style upon occupational stressors in the ambulance service, such as workload, is limited.

One example of detached coping that ambulance employees use is dark humour, which is suggested to be an effective way of coping with stress (Kuiper, 2012). Black humour is a specific type of humour seen among emergency service personnel, which is suggested to be a type of humour that treats threatening and traumatic situations or events such as death, with amusement (Willinger et al., 2017).

Research suggests that dark humour makes it easier for staff to communicate with one another and is often used within the ambulance service to cope with aspects of the role, such as dealing with medical emergencies and patients (Charman, 2013; Halpern et al., 2009b). However, Halpern and colleagues have stated that using dark humour can isolate non-peers such as family and friends due to misinterpretation of the humour in relation to its context. This is particularly notable for student paramedics who may be shocked by the use of such humour (Christopher, 2015). Nevertheless, dark humour has been demonstrated as an effective detached coping strategy to reduce stress among ambulance service employees.

On the other hand, avoidance coping strategies allow individuals to avoid situations or events that have the potential to cause stress (Chang et al., 2006). Endler (1997) suggested that avoidance coping is the first reaction to stressful stimuli as individuals have the potential to immediately remove themselves from a stressful event or situation. Allott et al. (2015) highlighted that this can occur through both behavioural, such as physical withdrawal from a stressful situation or cognitive such as the use of distraction, such as watching television.

Substance abuse and alcohol consumption are commonly researched as avoidance coping mechanisms. For example, Dolan and Ender (2008) found that when coping with traumatic stress, military personnel engage in substance abuse to avoid dealing with the stress as it allows individuals to distract themselves from the stressor. However, these types of avoidance coping mechanisms have been associated with increased levels of stress and illness, suggesting that they are not effective in coping with stress (Gershon et al., 2008). Moreover, Brousse et al. (2011) suggests that avoidance coping is not effective when coping with traumatic stress as it can increase the risk of post-traumatic stress disorder, which exacerbates if an individual has experienced low levels of social support in their working environment (Chao, 2011). Together, this evidence suggests that avoidance coping is not an effective mechanism for coping with stress, which is further heightened by a lack of social support.

More recently, research into avoidance coping has expanded to look at other stressors such as the mistreatment at work, such as a perception that an employee is being undervalued. Hershcovis et al. (2018) found that avoidance coping styles are ineffective when used to cope with mistreatment at work. They suggest this is because individuals may physically avoid the individual who is mistreating them. The perpetrator may not be aware that they are doing anything wrong, and the mistreatment continues. Therefore, when returning to the working environment, individuals may again experience the mistreatment. This suggests avoidance coping is a mechanism that does not actively deal with the stressor.

Although Brousse et al. (2011) and Hershcovis et al. (2018) argue that avoidance coping is not effective, their research fails to consider an important occupational, avoidance technique of resignation. For example, Arnup and Bowles (2016) found that job dissatisfaction due to stress in the working environment was associated with staff resigning from their job. This demonstrates that resignation may be an influential factor in avoidance behaviour, which may not be accounted for in previous research that considers the use of avoidance coping within the workplace.

Together, the evidence surrounding avoidance coping strategies suggest they are ineffective in being able to cope with both traumatic and work-related stress, such as mistreatment. However, the research presented does not consider all forms of avoidant behaviour, such as resignation, which may be more of an indicator of avoidance behaviour rather than substance abuse or alcohol consumption.

Despite employees of the ambulance service having a wide range of coping styles and strategies, it is important to note that ambulance education does not provide training on how to

cope with stress. Instead, staff learn how to deal with it themselves, which may lead to the use of ineffective coping strategies, which, over time, become consistent in how they cope with stress (Halpern et al., 2009a). This suggests that ambulance employees may not have the most effective coping styles and may not utilise the most appropriate coping strategies. Therefore, there is a potential that stressors that ambulance employees are experiencing are exacerbated due to an inability to cope with them effectively.

Moreover, the research surrounding ambulance coping styles (e.g. Essex et al., 2008), focus generally on coping styles and strategies. For example, Essex and colleagues' research utilised a self-report method of obtaining information on the most used coping strategy. These types of research studies do not offer an insight into why or how these coping strategies are used and how they manifest themselves into coping styles.

2.6.2 Consideration for the use of coping styles

Despite research identifying that there are several effective coping styles and strategies, there are additional factors to consider, which may influence the use of coping styles and subsequent behaviours amongst ambulance employees.

Research has identified sex differences between males and females in the use of coping styles. Matud (2004) found that males are more likely to use active, problem-focused approaches compared to females who are more likely to use emotion-focused and avoidant strategies (Endler, 1997). Essex and collegues (2008) established a difference between coping strategies among ambulance staff and found that women were more likely to seek social support compared to males who would rather choose the emergency calls they attend.

An explanation for this difference in coping style comes from the notion that male coping strategies are decided through primary appraisal compared to females whose coping approach was determined by secondary appraisal (Watson et al., 2011). According to Lazarus and Folkman's (1984) Transactional Model of Stress and Coping, primary appraisal is the evaluation of whether a stressor is a threat or not. This research suggests that male coping strategies are determined based on whether or not they perceive the stressor to be a threat. On the other hand, female coping strategies are determined based on whether they believe they can control the stressor and have effective means to cope with it. This may explain why research has found females turn to emotion-focused approaches if they cannot control the stressor (Matud, 2004).

Moreover, research has uncovered an age difference among individuals who use problem-focused coping styles. Chen et al. (2017) found that older adults (over 60 years of age) are more likely to engage in problem-focused coping compared to younger individuals. Chen and colleagues suggested that this was due to the life experience and the ability to learn which coping strategies are more effective, which led to appropriate coping styles being developed. This suggests that older individuals are likely to have a better understanding of how to overcome stressors based on their previous experiences (Trouillet et al., 2011).

Similarly, research has identified an association with the use of problem-focused coping styles and time in service. Singh (2017) found that police officers who had spent a long period of time working for the service were more likely to use problem-focused coping. This supports research conducted by Chen et al. (2017), by suggesting that a longer time spent in service allows the development of appropriate coping strategies and styles based on experience.

However, one problem that stems from Singh's research is that they did not define the length of time in service required to use problem-focused coping. For example, there was no quantifiable information on how long it would take an individual to develop appropriate coping strategies and styles. Moreover, their research also failed to consider the influence of previous experiences in other organisations, which may have influenced their choice of coping strategy (for example, social support verses overworking). As a result, although the research indicates that these factors are influential, it is crucial not to view these as deciding factors in whether an individual has or uses problem, emotion, detached or avoidance coping styles and associated behaviours.

Furthermore, neuroscience research has found that there are specific areas in the brain that are related to coping, suggesting the process is automatic, rather than a choice made by the individual. Santarnecchi et al. (2018) found that areas of the brain, such as the anterior salience and default mode networks, can partly explain differences in coping style. The anterior salience filters sensory stimuli and default model networks are areas in the brain that are active when the individual is not. Santarnecchi and colleagues argue that the brain is automatic in selecting coping styles, which is influenced by the anterior salience processing the stimuli. This biological and neuroscientific approach to coping styles suggests that there are deeper and subconscious factors that may be related to the coping styles and strategies individuals use.

Alongside this, there are methodological challenges related to the conceptualisation of coping. There is an ongoing challenge of developing a typology for coping, which has so far been unachievable. This is because it requires the ability to record all individual behaviours and

actions that individuals exhibit, which is too vast (Skinner et al., 2003). As a result, there may be additional coping styles or strategies that are yet to be characterised or researched within the literature. This has consequences for current coping research, particularly with relation to coping styles, as researchers must be aware of categorising individuals into the set criterion of coping styles.

Furthermore, there is also differing terminology used to describe specific coping styles. For example, the terms active and rational coping are used to describe problem-focused coping strategies. Additionally, some research does not define the coping styles they are studying. This is seen within Lee et al. (2016), who used the term coping strategies when investigating the coping within a sample of nurses. The broad terminology used in such studies is unable to effectively contribute to the literature surrounding specific coping styles, as they do not indicate which ones they may be investigating. One problem with this is that researchers could misinterpret findings that could lead to inappropriate conclusions surrounding effective coping styles.

This is particularly relevant when considering coping strategies such as social support. Within the literature, social support is referred to as a singular term (e.g North et al., 1993). The interpretation of the term social support can lead to either a problem-focused or emotion-focused meaning, which has consequences for applying the research to practice. Evidence suggests that there are several different types of social support which have negative and positive effects on stress (Roohafza et al., 2014). Therefore, when research is addressing social support as a coping behaviour, the authors need to note the use of social support and which are effective to avoid misinterpretation and inadequate application.

Although there are several coping styles and strategies that are employed by ambulance personnel, this section highlights that they need to be considered in relation to several additional factors such as age, sex and from a neuroscience perspective. Moreover, there are methodological challenges when researching coping, which is related to the terminology surrounding coping.

2.7 Sickness absence, stress and coping styles in the ambulance service

It is evident that there are several factors that have the potential to influence sickness absence leading to a variety of negative consequences for the employee and the organisation. However, recent evidence has suggested that sickness absence is declining in some organisations. For example, the Chartered Institute of Personnel and Development (CIPD) found that in 2020, results from their Health and Wellbeing at work survey, indicated that sickness absence was

the lowest it had been in 20 years. However, this is not consistent with all organisations in the UK, particularly the ambulance service who have reported steady increases in their sickness absence rates since 2015.

In 2009, the Boorman review highlighted that staff health and well-being is a major problem amongst all NHS employees (Boorman, 2009). Moreover, Carter (2018) reported that sickness absence in the ambulance service was the highest compared to all other NHS occupations. Because of this, targets have been set for NHS Improvement to reduce sickness absence across the NHS to 2.9% by 2022.

Research has focused on understanding and improving the provision of wellbeing across the NHS. For the ambulance service, research has focused on the association between supportive management and wellbeing (Petrie et al., 2018), employees' experiences of musculoskeletal injuries (Wiitavaara et al., 2007), post-traumatic stress disorder (Clohessy & Ehlers, 1999) and the risk of occupational injury (Roberts et al., 2015). There is a consensus within the ambulance literature that ambulance staff experience increased levels of stress, are at risk of musculoskeletal injury and PTSD (Golding et al., 2017).

The majority of research addressing the health and well-being of staff does not consider sickness absence as an outcome and primarily focus on other aspects of health. As outlined in the theoretical framework and conceptualisation of sickness absence, the health of an individual is a predisposing factor for sickness absence although ill-health is not a necessary condition for an absence to occur (Alexanderson, 1998). Arguably, sickness absence occurs due to health-related factors influenced by the individual's experience of illness.

CIPD (2020) highlight that the causes of sickness absence depend on the type of absence being examined. For example, long-term sickness absences are often caused by mental illness or mental ill health, followed by stress being a cause of both long-term and short-term sickness absence. This therefore suggests that these factors are common amongst all organisations and that it is not solely an ambulance service problem. However, due to the high level of stress that ambulance staff experience in their day to day lives, it is important to focus on this organisation as they may be at an increased risk of sickness absence due to interplay between stress and ineffective coping.

Research into the relationship between stress, coping styles and sickness absence in other occupational groups, such as nurses, have found strong associations between these factors. Amongst nursing staff, research found that when levels of stress were low, researchers observed a moderate level of sickness absence (Elstad & Vabø, 2008). However, when stress

increased, levels of sickness absence also increased (Schell et al., 2013). Schell and colleagues also stated that individuals who did not experience sickness absence exhibited lower levels of stress, suggesting that this association between stress and sickness absence operates both ways. Similarly, Trybou et al. (2014) found that experiencing high levels of stress increases the likelihood of sickness absence occurring, suggesting stress may also be a risk factor for sickness absence.

Most recently, Thorsen et al. (2019) aimed to investigate whether there was an association between stress and sickness absence and investigated whether this varied by age and length of sickness absence. Thorsen and colleagues found that stress was associated with sickness absence. In particular, there were differences between men and women, where stress was associated with long-term sickness absence only amongst women.

However, within Thorsen and colleagues' study, the association between stress and sickness absence was researched using a single measure of stress. The study measured stress using the question, “in the last two weeks, how often have you felt stressed?” (p. 822). This method of measuring stress may not be appropriate to determine the intensity of stress experienced in addition to whether the stress occurred within the workplace or at home. Similarly, within Trybou et al. (2014), Elstad et al. (2008) and Schell et al. (2013), the definition of high and low levels of sickness absence is not specified. It is unclear whether the research categorises sickness absence through either the duration or frequency of absence.

Singular measures of stress (such as focusing on one stressor) are not appropriate for research into sickness absence. Theories and empirical evidence state that individuals are exposed to several causes of stress in the working environment. Additionally, research has demonstrated relationships between specific stressors and health outcomes, including sickness absence. In particular, Pek et al. (2015) found that staff with low levels of responsibility, who were not responsible for decision making, were more likely to report that they were in good health. Alongside this, high levels of effort and low reward were associated with an increase in sickness absence spells (Götz et al., 2018). Together, these studies suggest that when investigating the relationship between stress and sickness absence, multiple measures of stress should be used.

It is apparent that the relationship between stress and sickness absence arises due to an accumulation of stressful situations that result in absence. This is evidenced by CIPD (2020) who reported that in the past year, organisations have made little progress towards preventing stress within the workplace. More commonly a reactive approach is taken where employees’

stress is identified once they are absent from work. However, this is not appropriate and CIPD highlight the need for all employees to discuss these sources of stress with management using a proactive, preventative approach.

Alongside stress, coping styles have also been associated with sickness absence, although the evidence base is sparse compared to that of stress. The first association between coping styles and sickness absence was investigated by Kristensen (1991), who argued that sickness absence in itself is a coping strategy. In particular, Kristensen stated that sickness absence is a method of avoidance coping, as an individual actively withdraws themselves from the working environment. This, in turn, allows them to recover and experience less work-related stress. However, Kristensen also argued that sickness absence could be seen as a problem-focused coping style if an individual is taking steps to withdraw themselves to protect their resources, as seen within the conservation of resources theory (Hobfoll et al., 2018). Van Rhenen et al. (2008) suggested that this goes beyond considering coping as a resource or individual characteristic. However, Van Rhenen and colleagues found within their study that using sickness absence as an avoidance coping strategy did not reduce work-related stress. This can be partly explained by Hershcovis et al. (2018), who found that avoidance coping strategies were ineffective as it does not actively deal with the stressors in the workplace. Therefore, when an individual returns from sickness absence, the stressors remain, which may mean they engage in further sickness absence.

When comparing problem-focused and avoidant coping styles, van Rhenen et al. (2008) suggested that individuals who use problem-focused coping are less likely to be absent from work compared to those who use avoidant coping styles. As a result, the evidence suggests that problem-focused coping styles are associated with lower levels of sickness absence (Schreuder et al., 2011). Schreuder and colleagues argued this was due to the ability to target the stressor face on, which lowered levels of stress and therefore sickness absence.

Arends et al. (2014) implemented a problem-focused coping intervention strategy where employees were involved in a process to find solutions for problems experienced at work. Arends and colleagues hypothesised that the intervention would prevent sickness absence and increase the use of problem-focused coping. Although they found that the study did not affect coping styles, individuals in the intervention group had decreased levels of sickness absence. This suggests that employees who can work collaboratively with colleagues to solve problems at work may have lower levels of sickness absence. Furthermore, this also highlights the need for social support within the working environment.

However, one problem with research into coping styles and sickness absence is the type of health condition being researched. For example, Arends and colleagues (2014) researched the effect of a problem-focused intervention on mental illness. Therefore, there is no clear evidence to suggest whether this would have the same impact on infectious diseases.

Similarly, van Rhenen et al. (2008) highlighted that within their study, they could not determine whether coping strategies changed over time. Moreover, they could not provide any evidence for whether sickness absence also influenced the types of coping strategies individuals engaged in. This is a major limitation of coping research in that coping is not often measured using longitudinal designs. This also has implications for the debate surrounding coping as an individual characteristic or as a resource. If studies are not measuring coping over time, then it cannot be determined whether it is a resource or individual characteristic.

With regards to the ambulance service, research has not focused directly on sickness absence but on the general health of ambulance staff. Research has demonstrated that ambulance work (such as shift work, high demand and low control) negatively influences the health of ambulance staff (Pek et al., 2015). For example, Anstey (2016) demonstrated how shift work affects paramedics' food choices leading to weight gain. In addition, Tsuboya (2015) suggested working overtime increased the risk of coronary heart disease. Specific studies into stress exposure by ambulance staff found that employees who experienced high levels of stress reported worse health and physical fitness (Betlehem et al., 2013). Together, this evidence suggests the type of work ambulance employees engages in, impacts their health. However, the problem is that these studies do not directly research sickness absence and fail to explain why high rates of sickness absence exist in the ambulance service.

One of the only studies into sickness absence in the UK ambulance service was conducted by Stilwell and Stilwell (1984) who focused on identifying the main causes of sickness absence within the West Midlands Metropolitan Ambulance Service. Stillwell and Stillwell found that women had increased levels of sickness absence compared to men, which is consistent with research into sex as a risk factor for sickness absence (Casini et al., 2013). They also found that musculoskeletal injuries were the main cause of high levels of sickness absence and recommended that the ambulance service invests in equipment and training to help staff overcome this problem.

Within their study, Stillwell and Stillwell took a descriptive approach to understanding sickness absence, which can be partly explained by the fact that in 1984, sickness absence rates were not widely available. Their study demonstrated that high levels of sickness absence existed as

they found ambulance employees had higher levels of absence than firefighters. However, the study does nothing more than provide a snapshot of sickness absence.

Since Stillwell and Stillwell's (1984) study, there has been a lack of evidence to suggest that research has focused on sickness absence within the UK ambulance service. This is concerning considering that Boorman (2009) and FTI Consulting (2015) suggest the NHS could make vast financial savings if they target sickness absence. Alongside this, research that has attempted to investigate ambulance wellbeing encounter several methodological problems.

Firstly, studies have focused on ambulance services in other countries, most commonly Australia and Nordic countries such as Norway and Sweden (e.g. Aasa et al., 2005). The healthcare system in the UK focuses on providing universal health care to patients, which is funded through the government (Friebel et al., 2018). Friebel and colleagues state that compared to other countries, the NHS provides care and resources free of charge (except for prescriptions). This is a unique healthcare system compared to other countries that are required to pay up-front for their care (Holm et al., 1999). For example, in Australia, the Medicare system funded by tax does not cover treatment by the ambulance service (Dixit & Sambasivan, 2018). There are several differences in the way that patients obtain and pay for their treatment in the NHS and other healthcare systems across the world. As a result, studies conducted within other healthcare systems may not be comparable to the NHS in the UK.

Secondly, research into the ambulance service focus on specific employees and areas, and there is a lack of research into call takers or dispatch staff. For example, within Clohessy and Ehlers' (1999) study on PTSD, they focused on paramedics and technicians rather than call takers. Similarly, in a study on the experience of musculoskeletal injuries, Wiitavaara et al. (2007) interviewed men aged 28 to 52 years of age. This particular sample excluded women and individuals who were nearing retirement, which is suggested to have an influential effect on sickness absence. As Farrants (2018) suggested, staff nearing retirement age may retire rather than taking a leave of sickness absence. As a result, excluding job roles within the ambulance service (such as call takers) affects the generalisability of the results to wider areas of the service. Therefore, it is crucial to include a range of ambulance occupations, ages and sex to be fully representative of an ambulance service.

Overall, there is a lack of research into sickness absence in the ambulance service, specifically exploring why high rates of sickness absence exist amongst the population. There are also several methodological problems that previous studies fail to address, such as a lack of research

in the UK and a lack of consideration for all ambulance employees. Overall, there is an evident research gap in the ambulance service literature that this thesis aims to address.

As outlined in this literature review, it is clear that research has not fully investigated the stress-reaction hypothesis in the context of the ambulance service. It is evident that ambulance employees experience increased stress, may have a lack of effective coping styles and a high level of sickness absence. However, there is currently a lack of research that suggests why this is the case. Together, this presents a clear gap in the current literature.

2.8 Aim and objectives of the thesis

Due to the high level of sickness absence in the ambulance service, there is a potential for the NHS to make financial savings by reducing these sickness absence rates. To do this, an exploration of factors that cause or influence sickness absence is required. Theory and previous research have demonstrated a tentative association between stress and coping styles on an increase in sickness absence. This has been demonstrated in the general population and other healthcare occupations but has not yet been applied to the ambulance service. Therefore, the overarching aim of this thesis is **to investigate sickness absence in the ambulance service and its association with stress and coping styles whilst developing ways in which it can be improved.**

To address the overarching aim, this thesis aims to answer the following research questions:

- What interventions, if any, are effective in reducing sickness absence?
- If so, what are the components of effective interventions?
- Using the current literature, can these interventions be applied to the UK ambulance service?
- To what extent are stress and/or coping styles associated with sickness absence?
- What are employees' reasons, experiences and perceptions of sickness absence?
- What do ambulance staff perceive should be included in an intervention to target sickness absence?

To meet these research questions, this thesis has three main objectives:

- Objective one (Study 1): To explore interventions that have reduced sickness absence and evaluate whether these interventions can be applied to the ambulance service

- Objective two (Study 2): To investigate the extent to which stress and coping styles are associated with sickness absence (quantitative phase) in addition to exploring employees' reasons, perceptions and experiences of sickness absence (qualitative phase)
- Objective three (Discussion): To make recommendations to improve sickness absence in the ambulance service considering the evidence from study 1 and 2

Chapter 3 Investigating and evaluating existing interventions that reduce sickness absence among healthcare workers (Study 1)

Guidelines published by the National Institute for Health and Care Excellence (NICE, 2019), recommended that research focuses on the evaluation of interventions in reducing sickness absence. Therefore, in order to reduce sickness absence within the ambulance service, an investigation of previous interventions need to be conducted to establish whether there are any effective interventions that could be applied to the ambulance service. To do this, a systematic review was conducted to gather and evaluate existing interventions (Crocetti, 2016).

Within their review, Carter (2018) highlighted a range of interventions that had been implemented in ambulance services to reduce their sickness absence rate. Previously, NHS Digital reported that WMAS rate of sickness was the lowest compared to other services. Carter (2018) suggests this was due to senior management's commitment to supporting staff by

offering early interventions, such as access to mental health services, nurses and a weight management programme. Therefore, this suggests that sickness absence rates can be reduced if an appropriate range of preventative interventions are implemented.

Originally, the aim of the systematic review was to study interventions in the context of the ambulance service. However, it became apparent that there was limited evidence of published and unpublished evaluations of sickness absence interventions within this population (such as the intervention described above). The population of interest was subsequently widened to include healthcare workers due to research highlighting that the ambulance service is perceived as the "health arm of the emergency services rather than an emergency arm of health services" (Wankhade, 2011, p. 397). This suggests that considering other emergency service occupations, such as police and fire, may not be appropriate if considering the main role of the ambulance service: the treatment and transportation of patients with a variety of illnesses and injuries (Caroline, 2008).

This chapter presents a systematic review, which aimed to investigate and evaluate existing interventions that reduce sickness absence among healthcare workers. As this systematic review did not specifically consider the ambulance service, this chapter will also present an evaluation of these interventions to the ambulance service using an applicability and transferability framework designed by Wang, Moss and Hiller (2006).

This chapter presents the methods, results and discussion of the systematic review, which have been published in an academic journal (Simmons et al., 2019). Within this chapter, there are section of the text that have been reproduced however, permissions have been obtained from the journal's editor to reproduce these sections within this thesis (Appendix A). For the purpose of this thesis, the results section has been updated to include studies that were not originally included in the publication.

The final section of the chapter provides an assessment of the applicability of effective interventions presented in the systematic review to the ambulance service. This is then followed with a general discussion including the strengths and limitations of the study alongside implications for practice and research.

3.1 Methods

3.1.1 Design

This systematic review was conducted in accordance with the recommendations from the Cochrane Collaboration (Cochrane Collaboration, 2019) and the Preferred Reporting Items for

Systematic Reviews and Meta-Analyses (Moher et al., 2009). Prior to conducting the review, the protocol was registered on Prospective Register of Systematic Reviews (PROSPERO) (Registration number: CRD42017058532).

3.1.2 Research questions

The aim of this systematic review was to investigate and evaluate existing interventions that reduce sickness absence among healthcare workers. To do this, the study consists of three research questions:

- What interventions, if any, are effective in reducing sickness absence?
- If so, what are the components of effective interventions?
- Using the current literature, can these interventions be applied to the UK ambulance service?

3.1.3 Inclusion and eligibility criteria

This review included studies whose research designs were randomised control trials (RCTs). RCTs were included in this review if they had an intervention and control group who received either a different intervention, usual care or no intervention. Any type of intervention (for example, work-based or exercise) that aimed to reduce sickness absence were included in this review if they contained the outcome measure of sickness absence. Both administrative and self-report measures of sickness absence were eligible for inclusion.

This systematic review sought to include randomised control trials because of their ability to impartially assess interventions due to the reduced risk of selection bias (Gardner et al., 2016). For example, participants characteristics, such as age and sex, are distributed evenly so that changes in the intervention group are better explained by the intervention rather than individual characteristics (Roberts & Torgerson, 1998). It also prevents researchers who are implementing the intervention from having influence over which participants are recruited to which condition (Akobeng, 2005). RCTs are also suggested to be the 'gold standard' of research evidence (Faraoni & Schaefer, 2016).

Alongside this, studies were also included if participants were employed in clinical roles within the healthcare service (for example, if they had direct contact with patients). Support staff in non-clinical roles or trainee healthcare professionals were not included in this review. Non-clinical support staff were excluded from this review due to the fact that they do not work with or alongside patients in their role. Additionally, trainee healthcare workers were not included

because they do not reflect the working population within healthcare with regards to day-to-day tasks and experience. As a result of these differences, there are specific interventions targeted at healthcare students, which will not be included in this review (Svensson et al., 2009).

3.1.4 Information sources

A series of database searches were conducted to identify published and unpublished literature, which included MEDLINE, CINAHL, PsycINFO, Web of Science, EMBASE, clinicatrials.gov and the Conference Proceedings Index. Searches were also conducted in the Cochrane Collaboration database and Prospective Register of Systematic Reviews (PROSPERO) to identify current and ongoing systematic reviews. Alongside this, materials identified in the literature searches were explored using backwards reference searching in addition to internet searches and discussions with study authors. Searches were conducted from their inception until 18th December 2019.

Numerous search terms were created originating from the population and outcome. For example, terms such as "allied health personnel", "nurse" and "paramedic" were used alongside "sickness absence", "sick leave" and "employee absence". To ensure for a wide variety of studies, no constraints were placed on language or publication status (such as published or unpublished).

3.1.5 Data collection and analysis

After searches were conducted, results were imported into reference management software (EndNote X8). Following this, the results underwent a screening process by two independent reviewers. By using two reviewers during the screening process, decreases the chances of inappropriate selection (such as a study being excluded when it should have been included) (Singh, 2017). For this review, studies were excluded if both reviewers agreed that it met the exclusion criteria. After the initial selection process, full texts were obtained and subsequently screened for eligibility.

To extract the data, the Cochrane Collaboration's data collection form was modified and used to capture information from the studies (Appendix B) including the aim and design of study, country, participant characteristics (e.g. job role), the type and method of intervention delivery, length of intervention, adherence rate (if reported) and outcomes. For the outcome of sickness absence, information such as the duration of sickness absence (i.e. the number of days off sick)

or the number of absences over a certain period of time were recorded. Additional information, such as the studies risk of bias, was also collected.

The risk of bias is a method recommended by the Cochrane Collaboration (Cochrane Collaboration, 2019) that allows for the assessment of research quality, which provides researchers with an informed decision on how bias may affect the interpretation of results (Hopp, 2015).

Risk of bias has several categories in which studies can score high, medium or low. These categories include selection bias, performance bias, detection bias, attrition bias and reporting bias. Definitions of these are presented in Table 2.

Table 2. Definitions of risk of bias

Risk of bias domain	Criteria	Example
Selection bias	Random assignment of participants to intervention conditions and allocation concealment	Low risk of bias awarded to studies who randomly assigned participants to conditions using a computerised random sequence generator
Performance bias	Adherence to intervention protocol, blinding of participants and researchers	Low risk of bias awarded to studies who blinded both the participants, researchers and provided an explanation of how this was done

Detection bias	Blinding participants to the outcome	Low risk of bias awarded to studies that used data from external sources such as sickness absence rates from a Human Resources database
Attrition bias	Inadequate reporting of outcome data, missing information present	Low risk of bias awarded if attrition rates were evenly distributed across control and intervention groups and were reported and explained
Reporting bias	Specific outcomes reported	Low risk of bias awarded if complete outcome data was presented from baseline to follow up

Guidelines established by Jones, March, Curtis and Bridle (2016) were used to determine the risk of bias of studies. A low risk of bias was provided if all criteria were deemed low, a medium risk of bias was provided if one criteria was graded high or two graded as unclear and a high risk of bias was awarded if more than one criteria was deemed high or more than two were deemed unclear.

A common method of analysing data from systematic reviews are meta-analyses. However, according to guidelines by the Cochrane Collaboration (2019), a meta-analysis is not appropriate when the studies are heterogeneous. Often meta-analyses are conducted on similar groups of individuals or intervention types, however, within this review the studies were too diverse for a meta-analysis. Therefore, a narrative synthesis is provided.

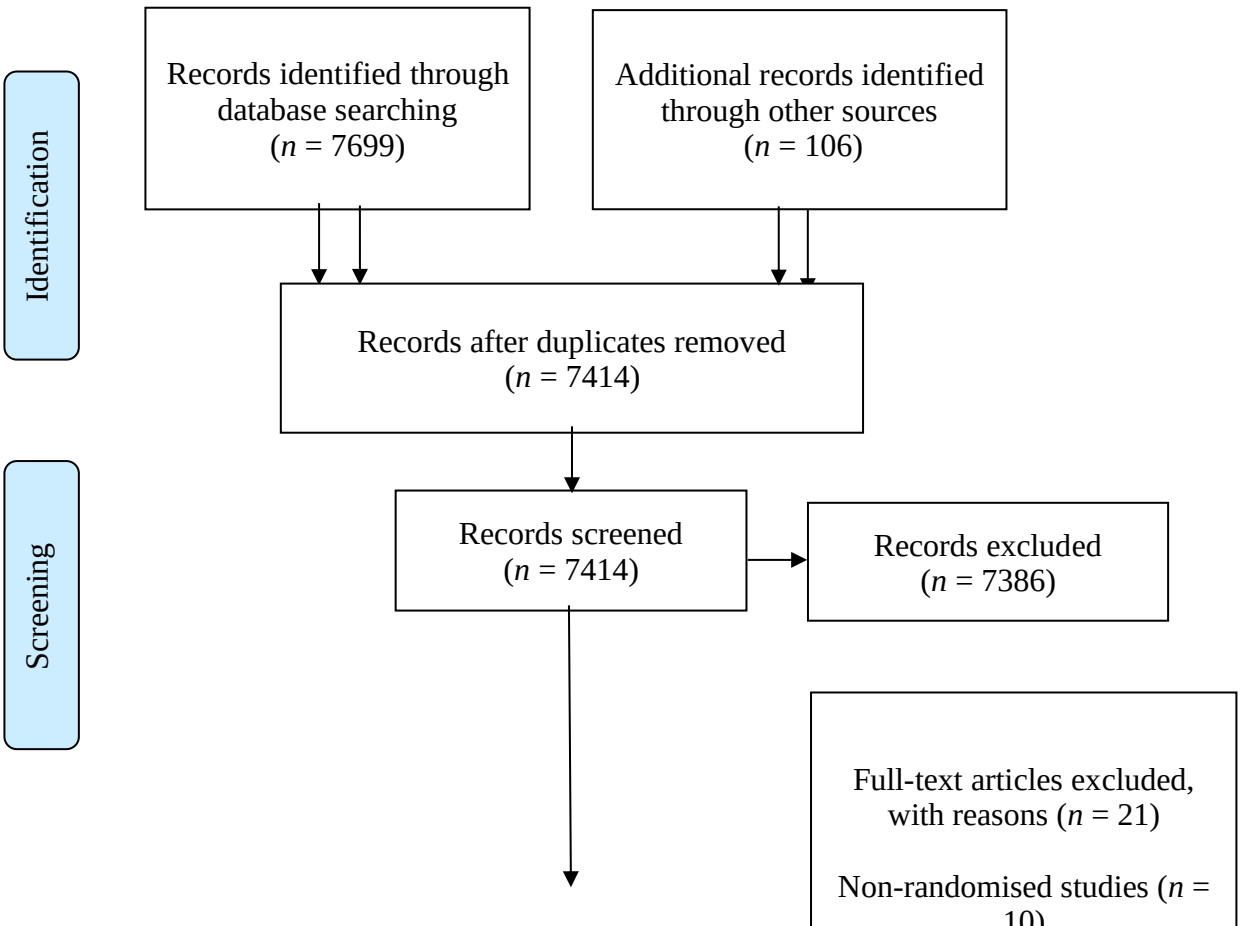
Within the narrative synthesis, the outcome measure of sickness absence is treated as a dichotomous outcome (defined as a total number of participants in each group who had been absent). These are presented both as risk ratios (to estimate the efficacy of an intervention) and rate ratios (to determine the incidence of sickness absence). Alongside this, the interventions have been grouped into four categories: exercise-only, multicomponent programmes, influenza vaccinations and process consultation interventions.

3.2 Results

Initial searches produced a total of 7805 records, which following the screening and removal of duplicates, 7386 were excluded based on title and abstract. A total of 28 full-text articles were accessed and seven studies were identified as meeting the inclusion criteria (Figure 11). These included one exercise-only intervention (Palumbo et al., 2012), three multicomponent intervention programmes (Brox & Frøystein, 2005; Roussel et al., 2015; Tveito & Eriksen, 2009), two influenza vaccinations (Weingarten et al., 1988; Wilde et al., 1999) and one process consultation (Weir et al., 1997) (Table 3).

Three studies were conducted in the United States of America (Palumbo et al., 2012, Weingarten et al., 1988, Wilde et al., 1999), two in Norway (Brox and Frøystein, 2005, Tveito and Eriksen, 2009) one in Canada (Weir et al., 1997) and one in Belgium (Roussel et al., 2015). Participants ranged from nursing home employees (Brox and Frøystein, 2005, Tveito and Eriksen, 2009), nurses, physicians and respiratory therapists working in a medical centre or hospital (Palumbo et al., 2012; Roussel et al., 2015; Weingarten et al., 1988; Weir et al., 1997; Wilde et al., 1999). Sickness absence was measured in hours (Palumbo et al., 2012; Weingarten et al., 1988; Weir et al., 1997), number of days off sick (Tveito & Eriksen, 2009; Brox & Frøystein, 2005; Wilde et al., 1999) and percentage proportion of individuals off sick during a specified time period (Roussel et al., 2015).

The risk of bias assessment presented in Table 4 outlines the overall risk of bias for each study. In particular, four studies were assessed as having a medium risk of bias (Palumbo et al., 2012; Weir et al., 1997; Weingarten et al., 1988; Wilde et al., 1999) and three were assessed as having a high risk of bias (Brox et al., 2005; Roussel et al., 2015; Tveito et al., 2009).


Identification
Screening
Records identified through database searching (n = 7699)
Additional records identified through other sources (n = 106)
Records after duplicates removed (n = 7414)
Records screened (n = 7414)
Records excluded (n = 7386)
Full-text articles excluded, with reasons (n = 21)
Non-randomised studies (n = 10)

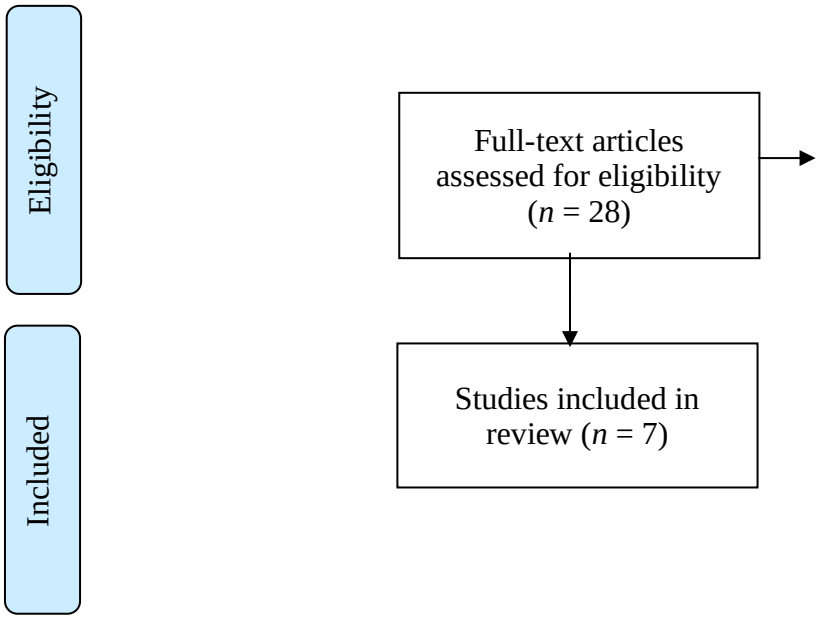


Figure 11. PRISMA flow diagram adapted from Moher, Liberati, Tetzlaff and Altman (2009)

Table 3. Characteristics of included studies

Author (year)	Study location and design	Participants and allocation	Description of intervention	Description of outcome measure	Outcome measure (unit) and period of assessment	Risk of bias assessment	Results
			Exercise-only interventions				
Palumbo et al. (2012)	Randomised control trial (RCT) United States of America	Older nurses from an academic medical centre Intervention: *n* = 7 Control: *n* = 7 Total: *n* = 14 Allocation: Individual	Tai Chi classes (13 x 45-minute sessions with 30 minutes Tai Chi and ten minutes of breathing exercises with participants practicing on their own for ten minutes x 4 days per week). The control group did not receive any intervention	Work absenteeism including sickness, injury, personal issues and stress	Unit: Hours Work absenteeism: unscheduled combined time off (CTO) over the comparable time period in the previous year and during the intervention	Medium	*Mean ± Standard deviation, Intervention: 3 ± 0 hr Control: 10 ± 14 hr
			Multi-component interventions				
Tveito et al. (2009)	Randomised controlled pilot study (RCT)	Employees in a nursing home for older people	Integrated health programme: physical exercise, health	Sick leave	Unit: Days off sick per year	High	*Mean (95% CI), Intervention:

	Norway	Intervention: *n* = 19 Control: *n* = 21 Total: *n* = 40 Allocation: Individual	information/stress management training and a practical examination of the workplace. The control group did not receive any intervention		Sick leave: year before the start of the intervention, the intervention year and the year after the intervention		36.00 (5.20-66.80); Control: 35.20 (14.10-56.20) (post-test)[6]
Roussel et al. (2015)	Randomised control trial (RCT) Belgium	Caregiving hospital employees Intervention: *n* = 31 Control: *n* = 38 Total: *n* = 69 Allocation: Individual	Multidisciplinary prevention programme including intervention at policy level, exercise (six one-hour sessions of walking, two-sessions of lumbo-pelvic motor control and cardiovascular training), psychosocial (1-hour sessions focused on	Work absenteeism related to lower back pain/musculoskeletal symptoms	Unit: Percentage proportion of workers that suffered from work absenteeism during the last 12 months Work absenteeism: baseline and six months	High	Risk ratio 0.33, 95% CI (0.18-0.62)

[6] These are presented as differences between the intervention and control at baseline and post-test

			communication and behaviour change), nutritional advice and a practical examination of the workplace (ergonomics). The control group did not receive any intervention				
Brox et al. (2005)	Randomised control trial (RCT) Norway	Community nursing home employees Intervention: *n* = 63 Control: *n* = 56 Total: *n* = 119 Allocation: Individual	Physical exercise consisting of weekly classes of light aerobic exercise) alongside nutrition and stress management sessions. The control group received no intervention	Sickness absence included all self-certified (up to four 3-day blocks per year) and GP certified leave. Absence due to other causes such as children's sickness or	Unit: Days Sickness absence: included all self-certified sick days (up to 3-day blocks per year) and doctor –certified leave. Collection for two 7-month periods before and for the year of the intervention	High	Rate ratio 1.08, 95% CI (0.98-1.18)

				civic duties were not included. Sickness absence less than 100% of a full day was summed to give whole days			
			Influenza-vaccination interventions				
Weingarten et al. (1988)	Randomised, double-blind, placebo-controlled clinical trial United States of America	Medical centre employees Intervention: *n* = 91 Control: *n* = 88 Total: *n* = 179 Allocation: Individual	Influenza vaccination Intervention group: Dose (0.5 ml) of inactivated split-virus influenza vaccine Control group: Saline solution	Absences caused by illness during the influenza activity	Unit: Hours Sickness absence: after injection and during illness surveillance	Medium	Risk ratio 0.99, 95% CI (0.71-1.39) Post-intervention

Wilde et al. (1999)	Prospective, randomised, double-blind, controlled trial United States of America	Hospital based physicians, nurses and respiratory therapists Intervention: *n* = 181 Control: *n* = 180 Total: *n* = 361[7] Allocation: Individual	Influenza vaccination Intervention group: Dose (0.5 ml) of inactivated split-virus influenza vaccine Control group: Saline solution, meningococcal or pneumococcal vaccine	Days absent from work due to illness	Unit: Days Days absent from work due to illness: Rate ratio was used to estimate vaccine effectiveness in reducing cumulative days of illness or absence	Medium	Mean ± Standard deviation; Intervention: 0.10 ± 0.35; Control: 0.21 ± 0.75
Process consultation interventions							
Weir et al. (1997)	Randomised control trial (RCT) Canada	Hospital employees Intervention: *n* = 86 Control: *n* = 78 Total: *n* = 164 Allocation: Cluster	Process consultations for nurse managers, 3 full-day workshops and individual consultations over 12 months (6, 9 and 12 months).	All types, episodes, and hours of absence for each eligible staff member were summarised	Unit: Hours Sickness absence: Before intervention and 12 months after intervention	Medium	* Mean ± Standard deviation, Intervention: 23.16 ± 99.38; Control: 2.81 ± 102.75)[8]

[7] Participants (*n* = 246) were recruited at baseline and followed up for up to three winter seasons. Participants continued for one winter (*n* = 191), two winters (*n* = 49) or 3 winters (*n* = 24)

[8] These are presented as change scores between T^1 (beginning of intervention) and T^2 (end of intervention)

	Workshops delivered to allow managers and their unit staff to participate in decision-making. Consultation meetings occurred throughout the 12 months of the intervention between nurse managers and consultants. Consultants advised on leadership, communication, decision-making, unit atmosphere and other topics. The control group did not receive any intervention	from hospital records into short-term and long-term absences

*Authors were contacted but data were not available

Table 4. Risk of bias for included studies

Article/author	Selection bias (sequence)	Selection bias (concealment)	Performance bias	Detection bias	Attrition bias	Reporting bias	Overall risk of bias

Brox et al. (2005)	Unclear	Low	Participants: High Personnel: High	Low	Low	Low	High
Palumbo et al. (2012)	Unclear	Unclear	Participants: High Personnel: Unclear	Low	Unclear	Low	Medium
Roussel et al. (2015)	Low	Unclear	Participants: High Personnel: High	High	Unclear	Low	High
Weir et al. (1997)	Low	Unclear	Participants: Unclear Personnel: Unclear	Low	High	Low	Medium
Tveito et al. (2009)	Low	Low	Participants: High Personnel: Unclear	Low	High	Low	High
Weingarten et al. (1988)	Low	Low	Participants: High Personnel: Low	Low	Low	Low	Medium

Wilde et al. (1999)	Low	Low	Participants: Unclear Personnel: Low	Low	Unclear	Low	Medium

3.2.1 Exercise-only interventions

One study was identified as an exercise-only intervention, that consisted of Tai Chi classes (Palumbo et al., 2012). Within this intervention, sickness absence was measured in hours using the unscheduled combined time off over the comparable time period in the previous year. These data were provided by the human resources department from payroll records with permissions from participants.

The risk of bias assessment concluded that this study had a medium risk of bias, due to a lack of explanation as to how participants were randomised to the intervention and control group. Alongside this, the authors provided a lack of information as to how randomisation was conducted. It was also unclear whether the research personnel were blinded to the intervention.

The study reported a reduction in sickness absence during the intervention period compared to the control, favouring the intervention group (Mean ± Standard Deviation; Intervention: 3 ± 0 hr; Control: 10 ± 14 hr).

3.2.2 Multicomponent intervention programmes

Three multicomponent intervention programmes were identified (Brox & Frøystein, 2005; Roussel et al., 2015; Tveito & Eriksen, 2009). One study consisted of an integrated health programme with physical exercise, health information, stress management training and a practical examination of the workplace (Tveito & Erikson, 2009). Participants' sickness absence data were provided by the nursing home with the unit of measurement being number of days off sick. The risk of bias assessment concluded that this study had a high risk of bias. This was due to the reported procedures regarding blinding of research personnel within the intervention. It was unclear whether the aerobics instructor was part of the research team. Additionally, a high risk of bias score was given to attrition bias as there was incomplete outcome data for participants.

Another study included a multicomponent intervention programme including a policy, exercise, psychosocial and a practical examination of the workplace (Roussel et al., 2015). Sickness absence data on musculoskeletal absences were gathered by participant self-report with the unit of measurement being proportion of participants off sick over a 12-month period. This study was deemed to have a high risk of bias due to a lack of information that explained how allocation concealment occurred among participants. In addition, this study was assessed to have high levels of performance bias as both the participants and personnel were not blinded to the intervention.

A third study consisted of a physical exercise intervention consisting of weekly classes of light aerobic exercise alongside nutrition and stress management sessions (Brox & Frøystein, 2005). Sickness absence data were gathered from the community insurance register with the unit of measurement being number of days off sick. The overall risk of bias was deemed high for this study due to high performance bias as participants and personnel were not blinded to the intervention.

One intervention (Roussel et al., 2015) was able to demonstrate a reduction in sickness absence due to musculoskeletal symptoms using an intervention consisting of policy changes, exercise and a practical examination of the workplace (risk ratio 0.33, 95% CI 0.18-0.62). Brox and Frøystein (2005), however, did not demonstrate a reduction in sickness absence (risk ratio 1.08, 95% CI 0.98-1.18). Similarly, Tveito and Erikson (2009) also reported no effect of their intervention on the change in number of sick days from baseline to post-test (Mean, 95% CI; Intervention: 36.00, 5.20-66.80; Control: 35.20, 14.10-56.20).

3.2.3 Influenza vaccination interventions

This review identified two influenza vaccination studies (Weingarten et al., 1988; Wilde et al., 1999), both of which were interventions consisting of providing the intervention group with a dose (0.5 ml) of inactivated split-virus influenza vaccine. One study had a control group who received a placebo of saline solution (Weingarten et al., 1988) and another with the control group receiving a placebo including saline solution, meningococcal vaccine or pneumococcal vaccine (Wilde et al., 1999). Sickness absence data were obtained via weekly telephone interviews with the study nurse to inquire about illness during the previous week (Wilde et al., 1999) and obtained through computerised timecard data (Weingarten et al., 1988).

The measurement of sickness absence varied between the studies with Weingarten and colleagues measuring sickness absence after the injection and during an illness surveillance period of 3 months with the unit of measurements being hours. Wilde and colleagues measured sickness absence; however, they did not specify when or how the data were obtained. The unit of measurement was days lost from work due to illness.

The risk of bias assessment deemed both studies to be of medium risk of bias. For Weingarten et al., (1988) this was due to the participants being able to predict the contents of their injection. Weingarten and colleagues found that one week after the injection 84% of participants correctly guessed that they were in the control group, compared to 57% in the intervention group. For Wilde et al., (1999) however, it was unclear as to whether the attrition rates reported were from

the intervention or the control group. The study also was unclear as to whether the participants were blinded to the intervention.

One intervention (Weingarten et al., 1988) reported similar risk of sickness absence between intervention and control groups (risk ratio 0.99, 95% CI 0.71-1.39). The other intervention (Wilde et al., 1999) found that participants in the intervention group had fewer cumulative days of sickness absence than those in the control (Mean ± Standard deviation; Intervention: 0.10 ± 0.35; Control: 0.21 ± 0.75).

3.2.4 Process consultation interventions

There was one process consultation intervention (Weir et al., 1997), which aimed to create a relationship between nursing staff and nurse managers. This intervention allowed employees to understand and make decisions on changes in their working environment. Sickness absences were measured in hours obtained from participants' hospital records and were summarised into short-term and long-term absences. This data included all types, episodes and hours of absence for each staff member.

The risk of bias assessment deemed this study to have a medium risk of bias. This was due to a lack of explanation as of the methods used to conceal the allocation sequence of participants and it was unclear whether participants and personnel were blinded to the intervention. There was also a high risk of bias for attrition as there was incomplete outcome data and attrition rates and reasons for them were not reported.

The intervention was able to demonstrate a higher change score from baseline to post-test in the intervention group compared to the control group (Mean ± Standard deviation; Intervention: 23.16 ± 99.38; Control: 2.81 ± 105.75).

3.3 Applicability and transferability of interventions to the ambulance services

The results of the systematic review identified seven randomised controlled trials that aimed to reduce sickness absence among healthcare workers. Three interventions were successful in demonstrating a reduction in sickness absence and included the exercise-only intervention of

Tai Chi (Palumbo et al., 2012), a multicomponent intervention programme (Roussel et al., 2015) and one influenza vaccination intervention (Wilde et al., 1999).

The evidence presented in this systematic review highlighted a lack of evidence for interventions to reduce sickness absence specific to UK ambulance services. The studies included in the review were conducted on other occupational groups (such as nurses) and in different settings (such as hospitals or healthcare systems in other countries). Assessing the applicability and transferability of the effective interventions will help to determine the extent to which these interventions can work within UK ambulance services.

Applicability refers to "the extent to which an intervention process could be implemented in another setting" (Wang et al., 2006, p. 77). Meanwhile, Wang and colleagues suggest assessing transferability helps to establish whether the intervention is still effective in a different environment. Guidelines have been proposed by Wang et al. (2006) to appraise the applicability and transferability of interventions to other settings (e.g. Baker et al., 2011). They suggest a set of attributes which assess the political and social environment, culture, resources, education, target population characteristics and capacity.

The following section will provide a review of the applicability and transferability of two interventions (Palumbo et al., 2012; Roussel et al., 2015) to the UK ambulance services using guidelines proposed by Wang et al. (2006) (Table 5) and existing literature. However, the influenza vaccination intervention will not be assessed for applicability and transferability. This is because NHS staff are already offered an influenza vaccination, therefore, it can be assumed this intervention is already implemented with the service (Pereira et al., 2017).

Table 5. Questions to determine applicability and transferability of interventions adapted from Wang et al. (2006)

	Domain	Questions
Applicability	Political environment	Does the political environment of the local organisation allow this intervention to be implemented? Is there any political barrier to implementing this intervention?
	Social norms and ethical issues	Would the ambulance service and its employees accept this intervention? Does any aspect of the intervention go against the service's social norms? Is it ethically acceptable?
	Cultural environment	Can the contents of the intervention be tailored to suit the ambulance cultures?
	Resources	Are the essential resources for implementing this intervention available in the ambulance setting?
	Education and skills	Does the ambulance service have a sufficient educational level to comprehend the contents of the intervention? Which organisation or department in the ambulance service will be responsible for the provision of this intervention in the local setting? Does the provider of the intervention in the local setting have the skill to deliver this intervention? If not, will training be available?
	Barriers	Is there any possible barrier to implementing this intervention to the structure of that organisation?
Transferability	Baseline prevalence	What is the baseline prevalence of the health problem of interest in the ambulance service? What is the difference in prevalence between study setting and the local setting?
	Characteristics of target population	Are the characteristics of the ambulance service comparable between the study setting and the local setting? With regard to the particular aspects that will be addressed in the intervention is it possible that the characteristics of the target population, such as ethnicity, socio-economic status, education level, will have an impact on the effectiveness of the intervention?

Capacity	Is the capacity to implement the intervention comparable between the study setting in such matters as political environment, social acceptability, resources, organisation structure and the skills of the local providers?

3.3.1 Applicability

3.3.1.1 Political environment

The National Health Service is said to have a political climate that is led by the efficiency and performance of its services (Finkelstein & Dowell, 1996). Internal organisation and external governmental politics govern the NHS, and this can have implications on the implementation of interventions (Jones, 2015).

With regards to the internal organisation, there is evidence to suggest hostile relationships between clinical staff and management. For example, research by McCann et al. (2013) found that teams were frustrated at management for making changes to policy without consulting employees. Young and Cooper (1995) also highlights that management were not encouraging change effectively, due to a lack of good relationships with their employees, which did not allow employees' ownership of change. The problem of implementing new policy and an inability to promote change may be a political barrier to the implementation of these interventions.

For example, the multidisciplinary prevention programme by Roussel et al. (2015) incorporated changes at the policy level regarding exercise as part of the intervention. Boorman (2009) highlights in his review that sickness absence is a problem within the ambulance services and that bringing the focus to health and wellbeing of staff is essential. As McCann et al. (2013) highlighted, implementing policy changes without the consultation of employees suggests it is unclear how staff will receive new interventions to improve their wellbeing. As with other organisations, there may also be some resistance in the implementation of any new policy and practice.

Another problem within the political environment is organisational justice. Organisational justice is when an individual perceives they are being treated fairly within an organisation (Leineweber et al., 2017). Difficulties arise with the implementation of interventions when choosing the participants to take part in the programme. There are a wide range of ambulance employees in the service, which risks the violation of organisational justice if one group of ambulance staff experience the intervention while other staff are denied it.

To overcome this, sickness absence statistics could be used to determine which staff groups should be given the intervention. For example, those with higher sickness absence rates. However, the current sickness absence rates, as presented in Chapter 1, do not provide specific

sickness absence rates for job roles. For example, there is no information regarding absence rates in paramedics compared to control room staff.

An alternative approach for preserving organisational justice is to deliver interventions per individual station. For example, all staff at one ambulance station could receive the intervention. However, this presents its own challenges such as excluding individuals who do not work at ambulance stations. This may include staff who work remotely on ambulance vehicles.

Overall, there may be some difficulties in implementing the interventions if they require a change in policy within the organisation. Employees' perceptions of interventions and good management change practices, therefore, need to be taken into account to ensure minimal resistance.

3.3.1.2 Ethical issues

The goal of interventions is to improve the quality of life of its participants (Jenkins, 1992). Bruhn (2001) suggested there are several ethical issues, which are relevant when considering the application of interventions to ambulance services. These include: the aim of the intervention, recruitment and potential harm of participants.

The interventions in the systematic review aimed to reduce sickness absence using a variety of methods. However, reducing sickness absence can have adverse effects on an individual. Most notably, an individual can engage in presenteeism, which is defined as attending work despite being ill (Schultz & Edington, 2007). Presenteeism has implications for both the employee and the organisation they work for (Sanderson & Cocker, 2013). For example, being at work when unwell may cause stress thus increasing risk of future cardiovascular disease (Kivimäki et al., 2005), or allow spread of infectious disease, and so may inadvertently increase sickness absence in the individual or their colleagues (Taloyan et al., 2012). This raises an ethical issue when using interventions to reduce sickness absence as it could be more harmful to an individual or others. Instead, greater importance should be placed on improving an individual's health and wellbeing rather than specifically aiming to reduce sickness absence. An example of this comes from Roussel et al. (2015) who focused on reducing sickness absence due to lower back pain. Despite this primary focus, they included several components such as dietary advice and physical activity that could also improve overall health and be subsequently applied to the ambulance population.

When delivering interventions, researchers should consider the potential harms to participants. Both of the interventions contained exercise components which can have adverse effects on individuals, such as increasing their risk of injury (Pate et al., 1995). To minimise the risk to participants, Roussel et al. (2015) provided a clear exclusion criterion within their intervention and did not include participants who were overweight, pregnant, were absent for more than four weeks in 12 months or those who had neurological, orthopaedic, cardiovascular or internal diseases. However, Palumbo et al. (2012) stated that participants were included if they were unable to attend the full 15-week intervention programme. They provided no exclusion criteria related to pre-existing health conditions or disability. Both Roussel et al. (2015) and Palumbo et al. (2012) did not give any information on whether the interventions caused any harms to participants. However, when applying this to the ambulance service, exclusion criteria might be needed to ensure that harm is prevented for some individuals (Simpson et al., 2010).

Recruiting participants to RCTs can be challenging due to the length of time and resources involved (Treweek et al., 2013) and can also be demanding for participants (Christ, 2014). Within the multicomponent intervention, Roussel et al. (2015) recruited participants by identifying those who were at risk of lower back pain. Although this is a valuable method of identifying participants who may benefit from the intervention, they do not specify how this was done. For example, they did not state whether this was through staff sickness absence records or self-report and whether participants were aware of their risk.

Accessing staff records raises concerns regarding confidentiality (Wynia et al., 2001). Within the United Kingdom, the Data Protection Act (Data Protection Act, 2018) governs how personal data are accessed and used. Under these guidelines, information about employees' health is regarded as sensitive data. Records of sickness absence (such as the number of days off sick and reason for absence) are considered sensitive data, which is not accessible to third parties. As a result, when applying these methods to the ambulance service, staff who are implementing interventions will not have access to individual case data on sickness absence. Therefore, they are unable to use this method to identify and recruit individual participants to an intervention. Using self-report is an alternative method where participants who have provided informed consent, could provide information on their sickness absence, which are then chosen at random to take part in the intervention.

Overall, the biggest concern when implementing these interventions in ambulance services is related to promoting presenteeism. Therefore, interventions should focus on the overall health and wellbeing of an individual or focus on conditions which cause high levels of sickness

absence. As a result, it is crucial to include exclusion criteria that minimise additional risk to participants.

By assessing the ethical acceptability, it is argued that there may be limited applicability of the interventions in their current form. For these to be fully applied to ambulance services, the method of recruitment of participants to the intervention needs to be considered in addition to adding or changing components of the interventions to promote overall health.

3.3.1.3 Cultural environment

Organisational culture is defined as a "system of shared values and norms that define appropriate attitudes and behaviours for organisational members" (O'Reilly & Chatman, 1996, p. 106). With regards to intervention development, the social and cultural environment can influence the extent to which interventions are implemented and can increase or decrease its effectiveness. Overall, it can affect whether or not an organisation is willing to adopt a novel intervention (Hemmelgarn et al., 2006).

Within ambulance services in the United Kingdom, Wankhade (2012) suggested that there was evidence for multiple cultures that stemmed from executive management to front-line employees. Further work by Wankhade and Brinkman (2014) indicated that the overall culture in UK ambulance services revolves around avoidance of risk, are unreceptive to change and have a top-down management style. The use of top-down management approaches can lead to an environment based on control (Wells, 2017), which can lead to resistance among individuals (Houser et al., 2017). This would have implications for potential interventions that are disseminated in a top-down manner.

Research into the culture of ambulance services has also found that employees do not express their emotions due to the culture of the workplace and with the fear of being seen as 'unprofessional' (Steen et al., 1997). Staff also deny that they are physically or psychologically affected by stress and demonstrate a front of bravado (Bounds, 2006). Therefore, the recruitment and retention of participants to interventions may be challenging, as employees may not want to take part due to fears that they are admitting that they have a problem. Furthermore, they may also be concerned about their employer or colleagues identifying this and impacting their relationships in the workplace.

Overall, the interventions proposed by Roussel et al. (2015) and Palumbo et al. (2012) do not consider these aspects of the cultural environment that exist in ambulance services. Therefore,

the interventions would need to be shaped to include consideration of how to overcome these cultural barriers in ambulance services.

3.3.1.4 Resources

The multicomponent intervention by Roussel et al. (2015) required several external health practitioners to implement the programme. Occupational therapists were required for ergonomics, one physiotherapist was needed for organising movement sessions, and a dietician was needed for the nutritional sessions. The paper does not specify the cost or cost-effectiveness associated with each health practitioner and the time they are involved in the project. Similarly, with Palumbo et al. (2012) a Tai Chi instructor with 20 years of experience in simplified Yang style was required for the intervention.

Within a recent report by CIPD (2020), data suggests that organisations do provide incentives and health benefits for staff including free eye tests, flu vaccinations, fitness incentives and access to counselling. However, this report does not provide a breakdown of the specific materials that the ambulance service provides and ultimately how successful these are for employees. Despite this, CIPD concluded that organisations who have these types of resources available to staff, report an increase in the health of their employees with lower levels of sickness absence. Therefore, this may suggest why interventions with these types of health-incentives have been effective with reducing sickness absence.

On the whole, it is difficult to determine from the literature the extent to which ambulance services have these resources. However, there is a general consensus that ambulance services have budgets, but it largely depends on where the services choose to direct their resources. What is known is that all ambulance services across the United Kingdom have access to occupational health services that provide advice to staff on their health and wellbeing (East of England Ambulance Service NHS Trust, 2015). Alexis (2011) stated in their article on managing sickness absence in the NHS that if frequent sickness absences occur then a health review by the occupational health service is recommended. Also, Alexis states that managers should use the policies devised by occupational health to make decisions about staff to minimise sickness absence. Research by Hignett et al. (2007) found that participants in the ambulance service were recommended occupational health services to assist with return to work, but they did not receive this.

Considering this information, a judgement cannot be made on the acceptability of the interventions with regards to resources. Alongside this, the current interventions do not provide information as to the cost and cost-effectiveness of the intervention delivery. Although an

occupational health service is provided for ambulance services, the extent to which it can provide support for these interventions is unknown. Further research and discussion with stakeholders are required to fully understand the extent to which the resources could be provided to ambulance services and at what cost.

3.3.1.5 Education and skills

Both interventions did not specify that specific training or knowledge is required to fully implement these interventions. This is because the interventions are delivered by experts such as physiotherapists and Tai Chi instructors. Therefore, if these individuals were included in the implementation of the interventions, no further training or skills would be required. In this respect, these interventions would be useful to implement because no additional training is needed.

3.3.1.6 Barriers to implementation

Elements of the multi-component intervention by Roussel et al. (2015) took place during working hours, for example, the physical activity was a lunchtime walk. To allow this to happen within the working day; the researchers were in contact with the hospital management and asked them to be flexible for participants taking part in the intervention. For example, allowing participants to have an adjustment in working hours. Contact with the hospital was essential to ensure adequate cover was provided to patients. Applying this to the ambulance services, there may be barriers to implementing the intervention during working hours. Ambulance employees have a high and increasing workload (Victor et al., 1999) due to increased volumes of calls to their service (Association of Ambulance Chief Executives, 2011) and clinical and performance indicators (Wankhade, 2011). Because of their demanding and intense workload, it would be impractical to conduct the intervention during working hours.

Similarly, Wankhade (2016) states that staff work long hours (such as 12 hour-shifts) and additional hours than their dedicated shift time. Delivering interventions after the ambulance shifts have finished would be challenging due to the unpredictable finish times. Staff involved in an intervention after work may not be able to attend due to completing overtime on their shift.

With the Tai Chi intervention, Palumbo et al. (2012) did not specify whether the classes took place during work time. However, as part of this intervention, participants were required to engage in Tai Chi for 10 minutes every day for four days. With the intervention being completing at home, this may be a way of overcoming barriers relating to the interventions

taking place during working hours. This was also a barrier to participation in some cases where employees have responsibilities at home, such as childcare. The barriers faced by participants in this intervention can also be applied to ambulance services who may experience similar responsibilities.

Overall, there are several barriers to implementation of these interventions to ambulance services. In particular, there are problems regarding delivery, such as the location and timing, in addition to responsibilities outside of the workplace, such as childcare responsibilities. To overcome these barriers, it would be necessary to consult with individual services and stations to understand the viable options of intervention delivery that would best suit the ambulance services.

3.3.2 Assessment of applicability

By considering the two successful sickness absence interventions identified in the systematic review and drawing on evidence from the literature, an assessment of applicability has been conducted. It became apparent through the assessment of applicability that the current interventions by Roussel et al. (2015) and Palumbo et al. (2012) are inapplicable to the ambulance service in their current form. This is due to several barriers in implementation including:

- Possible resistance from managers and staff to implement interventions, particularly at a policy level as seen within Roussel et al. (2015)
- Difficulties with the location and timing of intervention of delivery for ambulance staff, particularly if it is to take place during working hours as seen within Palumbo et al. (2012)
- A lack of information regarding the cost and cost-effectiveness of the intervention and their components, such as the Tai Chi instructor as seen in Palumbo et al. (2012)
- No consideration of potential harms to participants through intervention delivery

Wang et al. (2006) suggested within their guidelines that if applicability cannot be determined, it is impractical to consider the transferability of the interventions. This is because if the interventions cannot be applied to another setting, determining the extent to which the interventions will be effective in achieving the outcome (reducing sickness absence) in that population cannot take place. As a result, this chapter is unable to provide an assessment of transferability to ambulance services. The overall assessment of applicability has identified some gaps in the current research. Through the evaluation of these interventions, it has been

highlighted that there is a need for a specific ambulance service intervention that aims to reduce sickness absence, by focusing on the overall health of the individual or particular conditions that are responsible for high absence levels. The effective interventions identified in the systematic review do not consider any stress reduction components, which may be beneficial to ambulance employees considering the extent to which they are exposed to potential stressors in their working environment (as seen within Chapter 2, section 2.5).

Research also needs to account for the political, cultural environments and barriers encountered in ambulance services, such as the timing of the intervention. With regards to future research, this assessment of applicability highlighted that perspectives from ambulance staff need to be taken into consideration, which may help overcome issues with cultural barriers and may prevent the resistance of interventions from employees.

With regards to the assessment of the literature, some studies provided vital information about the ambulance services but were outdated and may not reflect the current environment (e.g. Young & Cooper, 1995). Literature suggests ambulance services are continually going through change; therefore, the extent to which this is the case in the current environment is unknown. Before judgements can be made about the acceptability of these interventions in this particular setting, more research is required.

3.4 Discussion

The aim of this systematic review was to investigate and evaluate existing interventions that reduce sickness absence amongst healthcare workers. In particular, the systematic review aimed to investigate the components of the effective interventions and use the literature to assess the extent to which the interventions could be applied to the ambulance service.

The review found seven studies that provided interventions to reduce sickness absence however, only three were able to demonstrate a reduction in sickness absence in the intervention group. These studies included the exercise-only intervention of Tai Chi (Palumbo et al., 2012), a multicomponent intervention including policy change, exercise, psychosocial and a practical examination of the workplace (Roussel et al., 2015) and an influenza vaccination (Wilde et al., 1999).

The searches updated in December 2019 revealed one, registered clinical trial that was not included in the original, published systematic review. The study aimed to assess a multifaceted intervention in nursing staff that involved an assessment of ergonomics, then staff were able to volunteer themselves for the secondary phase, which included tailored help such as cognitive

behavioural therapy and physiotherapy (Serra et al., 2019). Serra and colleagues' paper described the design of the intervention but has not yet provided any results.

Within the effective interventions, there was a variety of intervention types and delivery methods. The exercise-only intervention (Palumbo et al., 2012) implemented Tai Chi classes where participants were asked to exercise in groups in addition to individually. Exercise was also used within the multicomponent intervention programme (Roussel et al., 2015) amongst other components. Within this intervention, exercise included a total of six hours walking, two sessions of lumbo-pelvic motor control and cardiovascular training, although it is not specified what exercises the latter components consisted of.

Within the literature, exercise is suggested to be a significant influence on the health and wellbeing of an individual. In particular, Amlani and Munir (2014) found that taking part in exercise was able to reduce sickness absence. Similarly, Storm et al. (2016) found that those who do not engage in physical activity are more likely to be absent from work. In contrast, in their systematic review, Odeen et al. (2013) found a lack of evidence that active, or exercise interventions, reduced sickness absence. As a result, although exercise is key in maintaining an individual's health, exercise may not be the most effective component in reducing sickness absence.

This can be seen within the intervention proposed by Roussel et al. (2015), which consisted of other components such as behaviour change sessions and nutritional advice, which may have had an impact on sickness absence. Therefore, it cannot be stated with certainty that it was solely the exercise that contributed to the reduction in sickness absence. Instead, it could be the combination of exercise and additional components that produced the outcome.

Within the intervention, Roussel et al. (2015) stated that intervention at policy level was completed but the authors did not provide any further information as to what intervention occurred at this level. Likewise, with the behaviour change and nutritional advice, a lack of information was provided as to how this was carried out and whether any specific advice was provided to participants. As a result, no inferences can be drawn on the effectiveness of these intervention components and their methods of delivery.

The influenza intervention consisted of a vaccination of 0.5ml inactivated split-virus. Participants who received this vaccination had fewer days absence than those in the control group, suggesting the intervention effectively reduced sickness absence (Wilde et al., 1999). Similar intervention vaccinations by Weingarten et al. (1988) reported similar risks of sickness absence between the intervention and control group, suggesting the vaccination was not

effective. However, this may be due to longer follow up periods being present within the intervention study by Wilde et al. (1999), suggesting they had an opportunity to record periods of sickness absence over three winter, influenza seasons. Nevertheless, research has demonstrated a strong relationship between vaccinations and a reduced level of sickness absence amongst employees (Leighton et al., 1996). As a result, influenza vaccinations are now implemented routinely within the NHS (Pereira et al., 2017). Despite this, Pereira et al. (2017) argues that only 50% of employees are vaccinated each year, suggesting that there is a lack of uptake for these interventions. Therefore, although influenza vaccinations are effective at reducing sickness absence and are implemented within the NHS, not all employees are being vaccinated.

Overall, this review has highlighted that there are a number of intervention components that can reduce sickness absence amongst healthcare workers. These include the exercise of Tai Chi, a combination of policy level, exercise, psychosocial, nutritional and ergonomic interventions and an influenza vaccination.

Despite these findings, the exercise-only and multicomponent interventions cannot be applied to the ambulance service due to a number of barriers to implementation such as the location, timing, cost and cost-effectiveness of the interventions. As a result, further research into sickness absence in the ambulance service context is required in order to explore how interventions could be implemented in their cultural and political environment.

3.4.1 Strengths and limitations

This review followed a structured and predefined protocol in order to systematically review randomised control trials that aimed to reduce sickness absence among healthcare workers. This is one of the first systematic reviews to synthesise such evidence among staff working in healthcare. However, the evidence for the effectiveness of the interventions to reduce sickness absence is limited. This is partly due to the inability to perform a meta-analysis, as it was not deemed a suitable method as there were inconsistencies in sickness absence measurement varying between days, hours and proportion of time off sick.

In addition to the measurement of sickness absence, the articles included in this review had differing definitions of sickness absence. This ranged from musculoskeletal only absences (Roussel et al., 2015) to absences caused by influenza (Wilde et al., 1999) and all types of illness (Brox and Frøystein, 2005). Furthermore, each intervention was designed to have a different effect on the target population. An example of this is seen within Wilde et al. (1999), where the aim of the intervention was to assess whether an influenza vaccine was effective in

reducing illness, infection and sick leave. However, the aim of the intervention in Roussel et al. (2015) was to determine the effectiveness of a multidisciplinary prevention programme on individuals who were at risk for low back pain. Due to the variation in the aims and definitions across studies, this review was unable to determine whether interventions targeting absence from specific conditions, such as musculoskeletal, would be effective in targeting other types of absence. Consequently, this review was unable to derive a single numerical estimate of effect for any intervention.

This review also raises questions regarding the lack of interventions and in particular randomised controlled trials (RCT) in this area. RCTs were selected for inclusion in this review because of their ability to impartially assess interventions due to the reduced risk of selection bias (Gardner et al., 2016). They are also suggested to be the gold standard of research evidence in comparison to other research methodologies (Faraoni and Schaefer, 2016).

However, RCTs are complex, expensive and can be demanding on participants (Christ, 2013). In addition, Christ suggests a major flaw with RCTs is that the method cannot demonstrate how the intervention worked and whether it was appropriate for the participants, although these issues can be addressed by including a process evaluation. Due to the demands, RCTs are challenging to implement within organisations and one particular challenge is recruitment, which has implications for the length and resources involved in the trial (Treweek et al., 2013). Staff working in healthcare are suggested to have a high workload in addition to time pressures (Portoghese et al., 2014). In one study, nursing staff attributed a high level of workload to staffing shortages (Yanchus et al., 2017), which is a common problem within the healthcare sector (Barney, 2002, Heilmann, 2010). Therefore, this raises further questions as to the feasibility of conducting RCTs within a healthcare setting.

This may explain why there are a lack of RCTs in this area. This review only found seven studies worldwide that had implemented an intervention whose outcome was sickness absence. It could also explain why two studies (Brox & Frøystein, 2005; Tveito & Eriksen, 2009) were conducted in the broader healthcare setting of nursing homes due to the complex nature of RCTs and time-restricted staff.

Another limitation stemming from the studies included in this review is the failure to specify participants included in the interventions. Some studies were specific about the staff they were including in the trial, such as nurses (Palumbo et al., 2012) and hospital based physicians, nurses and respiratory therapists (Wilde et al., 1999). However, some studies did not specify participants, such as medical centre employees (Weingarten et al., 1988) and community

nursing home employees (Brox & Frøystein, 2005). It is unclear whether these broad categories included doctors, dentists or non-caregiving staff within their trials. In addition, no evidence was found for interventions to reduce sickness absence among other healthcare workers such ambulance service employees. This is despite there being evidence for high levels of sickness absence among this population (Health and Social Care Information Centre, 2015).

There are also methodological limitations with regards to implementing the applicability and transferability framework to the effective interventions. Wang, Moss and Hiller's (2006) framework offers a method, which serves as an alternative to implementing interventions, which could be costly and time-consuming. Using this framework allows for an initial assessment to take place before making a decision on whether or not a full-scale intervention should be tested within specific populations. absence in the ambulance service.

Wang et al. (2006) offer two main methods of conducting applicability and transferability; via the Delphi method or through a literature approach. The Delphi technique enables participants to rank their agreement on specific statements and develop a degree of consensus between them (Jones & Hunter, 1995). In contrast, the literature approach allows researchers to use existing literature to assess the social, cultural and political environment of the population of interest.

Despite this, there are a number of methodological flaws within these approaches. Delphi techniques can be demanding for participants due to the involvement in several Delphi rounds. This can be time-consuming and can lead to fatigue amongst participants, which can increase attrition rates (Huckfeldt & Judd, 1974). Despite this, Delphi studies do allow for a range of individuals to participate, which could include stakeholders and ambulance personnel.

In contrast, the literature approach is cost-effective as additional resources are not required for this method. However, relying on the literature may have its limitations if there is a lack of published research that provides details on the social, political and cultural environment. This was problematic within the current assessment of applicability as there was a lack of evidence to demonstrate the current level of available resources within ambulance services. Furthermore, by using the literature, the researcher is making a subjective judgment and interpretation on the applicability by using the available evidence. As a result, using this method means that the applicability and transferability is assessed through the best available evidence and the subjective interpretation of the researcher.

3.4.2 Implications for practice and research

The studies included in this review were conducted in a variety of different countries including the United States of America (Palumbo et al., 2012; Weingarten et al., 1988; Wilde et al., 1999), Norway (Brox & Frøystein, 2005; Tveito & Eriksen, 2009), Canada (Weir et al., 1997) and Belgium (Roussel et al., 2015). These countries each have differing healthcare systems which is why interpreting the findings in relation to other healthcare systems such as the UK National Health Service should be done with caution.

Despite sickness absence being an important issue for the NHS (Health and Social Care Information Centre, 2015), this review found no evidence of any interventions conducted within the United Kingdom. Despite this however there are a range of informal programmes that are conducted in the NHS, such as Peer to Peer support and chaplaincy services that are available to employees (Dodd, 2017). However, these have not been assessed for their effectiveness. NHS Employers (2017) highlighted within their report that interventions should be evaluated and continuously reviewed by staff in order to effectively prevent and manage sickness absence. Therefore, this suggests that evaluations of current interventions should be evaluated to further build the foundations for more evidence-based interventions rather than relying on untested programmes.

In 2018, NHS Horizons delivered a project called "Project A", which aimed to make improvements across ambulance services based on employee's experiences and reflections of working on the front line (Association of Ambulance Chief Executives, 2020). This initiative has led to a number of projects now being implemented across ambulance services including the development of quiet rooms across the West Midlands. However, there is a lack of evidence of their evaluation in relation to sickness absence.

Previous research has highlighted causes and risk factors for sickness absence among healthcare workers. In particular, research has identified workplace factors such as shift work (Lallukka et al., 2014) and unsupportive management (Boumans and Landeweerd, 1993) as being causes of sickness absence. Risk factors such as age and sex have also been identified (Casini et al., 2013, Blank and Diderichsen, 1995). However, there is a lack of evidence to suggest these causes and risk factors are being used within interventions to target sickness absence. This raises a question as to whether or not interventions are addressing the potential causes of sickness absence.

Sickness absence rates in the UK healthcare sector highlight high risk occupations such as ambulance service employees, nurses and support workers (Health and Social Care Information

Centre, 2015). However, this systematic review was unable to determine whether these interventions would be effective in reducing sickness absence in these particular occupations. Therefore, future research should focus on understanding sickness absence in these high-risk occupations and use this evidence to develop and test targeted interventions that could help to reduce sickness absence in high-risk occupations.

This review however has identified an important gap within sickness absence research, in particular, the inconsistency of sickness absence measurement. The articles included in this review measured sickness absence in a variety of units such as days or hours and reported these count data as continuous outcomes. The inconsistency of outcome definition is even more pertinent when considering the nature of work in healthcare. For example, interpretation of the number of hours of sickness absence is hindered when the total number of available working hours is not provided. Measuring sickness absence by number of working days (i.e. shifts off sick) could provide a more appropriate, standardised measure of sickness absence for those working in the healthcare sector.

Through assessing the applicability of the effective interventions to the ambulance service, it is clear that further research needs to be conducted to establish how to overcome barriers to implementation. One issue identified by assessing the applicability questioned whether staff, management and the organisation as a whole would accept any intervention in the service. In particular, the location and timing of intervention delivery is challenging within the service due to long working hours and excessive workplace demands (Victor et al., 1999; Wankhade, 2016; Wankhade et al., 2019). To further test for this, research could consider applying the normalisation process theory (NPT) to interventions to investigate the barriers to successful implementation and integration of interventions (Murray et al., 2010). According to Murray and colleagues, NPT helps to understand how interventions can be normalised within the workplace through a series of four, dynamic steps including coherence, engagement, action and monitoring. Murray and colleagues further highlight that this method is useful when developing an intervention due to its ability to consider the context of the working environment. Furthermore, researchers can assess whether the intervention overcomes any barriers or concerns employees may have about the intervention. As a result, research should focus on employees' perspectives to determine the extent to which sickness absence interventions could be received in the ambulance service.

3.5 Conclusion

The current review found three articles that provided evidence of interventions that reduce sickness absence among healthcare workers. However, due to the low-quality of this evidence and the studies being conducted in countries with differing healthcare systems, the findings may have limited relevance and cannot be applied to other health services. This was confirmed by using an applicability and transferability framework to assess whether effective interventions could be applied to the ambulance service. By using the current literature, it became apparent that the effective sickness absence interventions from the systematic review cannot be applied to the ambulance service.

Alongside this, the review was unable to suggest any implications for practice for the UK health service, because of a lack of robust evidence for effective interventions in the NHS. Nevertheless, this review has highlighted important implications for research including introducing shifts as a new standardised measurement of sickness absence. Alongside this, the review reinforced the notion of including employees' perspectives to discuss how to overcome barriers in intervention delivery and acceptance.

3.6 Summary

This chapter presented a systematic review that aimed to synthesise existing sickness absence interventions and describe the components of effective interventions within the healthcare population. The review also used the current literature to apply these interventions to the ambulance service.

The systematic review has identified an important gap within the current ambulance literature: that there is a lack of evidence to suggest there are effective interventions to reduce sickness absence in the ambulance service. As the sickness absence statistics published by NHS Digital suggest sickness absence is high, it is surprising that there is no evidence that interventions are being developed to reduce it. Therefore, this is an area for further exploration.

As none of the current healthcare interventions were applicable to the ambulance service population, a focus needs to be bought to understanding sickness absence in the context of the ambulance service. As previously stated in Chapter 2, theory and empirical evidence has suggested a tentative association between stress, coping styles and sickness absence. Therefore, these factors may be useful in further understanding what interventions would need to target in the ambulance service to reduce sickness absence. As a result, this thesis now moves to the

experimental studies of the thesis, which help to further understand the association between stress, coping styles and sickness absence.

Chapter 4 Methodology

Chapter 2, section 2.8, provided an overview of the research questions and objectives, which will be used to achieve the overarching aim of this thesis, which is **to investigate sickness absence in the ambulance service and its association with stress and coping styles whilst developing ways in which it can be improved.**

The previous chapter (Chapter 3), presented a systematic review that explored interventions that reduced sickness absence and evaluated whether these interventions could be applied to the ambulance service. This next chapter will present the methodology for objective two (Study 2), which aims to investigate the extent to which stress and coping styles are associated with sickness absence (quantitative phase) in addition to exploring employees' reasons, perceptions and experiences of sickness absence (qualitative phase)

The first section of the chapter will consider the philosophical approach to this study, a discussion surrounding the significance of this research, research design, measurement of key variables, sampling and ethical considerations.

4.1 Philosophical approach

Given that this study is investigating the association between three concepts that have not previously been researched in the context of the ambulance service, it is important to consider this thesis' epistemological and ontological position in light of this. A position that aligns with the current, novel nature of this thesis is pragmatism. Pragmatism is defined by Cameron (2011) as a "practical approach to a problem" (p. 101) and stems from the work of Dewey (2008) whose philosophy emphasised human experience.

Pragmatism's core beliefs suggest that knowledge is derived based on an individual's experience (Kaushik & Walsh, 2019), which helps individuals' make sense and interact with their world (Goldkuhl, 2012). It acknowledges the existence of reality but states that it is constantly changing due to actions and experiences (Morgan, 2014). Pragmatism is context driven (Dillon et al., 2000), which suggests pragmatists often view that the nature of reality, although it exists, cannot be fully determined (Pansiri, 2005). For example, the reality that exists within one population cannot be compared with that of another sample due to contextual differences in age, sex and culture.

This thesis intends to take a pragmatic philosophical approach, as this research focuses on individuals gaining knowledge through experience (for example, in their experience of stress and coping) and interacting with their world (such as their reasons, perceptions and experiences of sickness absence). The thesis' approach to pragmatism is reflected in several parts of the thesis. Firstly, pragmatism has guided the practicality of the research design, being the most appropriate approach for pursuing both quantitative and qualitative methods of enquiry (Parvaiz et al., 2016). Secondly, pragmatism has influenced the measurement of key variables (discussed in section 4.5), sampling (outlined in section 4.6) and data analysis (outlined in Chapter 5). Given the limited research in this area, this thesis requires a holistic and flexible approach to its research methods to ensure it is not constrained by the traditional positivist or constructivist approaches. Therefore, pragmatism is deemed an appropriate philosophical approach for this thesis.

4.2 Research significance

This current study, for the first time, will investigate sickness absence and its association between stress and coping styles in the context of the UK ambulance service. As previously outlined, sickness absence in the ambulance service is high (NHS Digital, 2019) and has an opportunity to be reduced due to the financial and psychosocial implications for the organisation and its employees (NHS England, 2015; Trybou et al., 2014). Previous theory and empirical evidence highlight a link between exposure to increased stress and physiological and psychological illnesses (Garbarino et al., 2013; Gründemann & Vuuren, 1998), suggesting this is an area for further exploration, particularly into its association with sickness absence. By determining relationships between aspects of the employees' environment and sickness absence, specific interventions could be designed to reduce or improve sickness absence and employee health.

As outlined in the systematic review, there are currently a lack of interventions that are appropriate for reducing sickness absence in the ambulance service. Moreover, the majority of the effective interventions focused on physical health, such as musculoskeletal health, or targeted specific diseases, such as influenza. As a result, there is also a lack of evidence for the effectiveness of stress-reduction interventions, which may be suitable for ambulance employees.

Therefore, this current research holds its significance in the notion that it aims to further quantitatively investigate the associations between stress (such as workload and perceived control), in addition to exploring the implications of coping styles, which is suggested to impact whether or not an individual copes better with stress (Moos & Holahan, 2003; Ozdemir & Arslan, 2018). Moreover, the research is dedicated to providing an opportunity for the employee voice to be heard with the use of a qualitative research approach. This will be useful to further understand employees' reasons, perceptions and experiences of sickness absence, whilst providing them with an opportunity to recommend ways in which sickness absence could be improved.

4.3 Research design

This research consists of an explanatory sequential (QUANT → QUAL) mixed methods study that aims to investigate the extent to which stress and coping styles are associated with sickness absence (quantitative phase) in addition to exploring employees' reasons, perceptions and experiences of sickness absence (qualitative phase).

The design of the study was influenced by the underpinning pragmatist epistemological and ontological position. A mixed methods approach has been chosen for a number of reasons. Firstly, to account for the dynamic role of the ambulance service, as arguably they are in a job where their realities and constantly changing, consistent with the pragmatist approach (Morgan, 2014). Secondly, mixed methods also account (through the use of a qualitative phase) for the perceived stress and coping styles that individual's experience (Kaushik & Walsh, 2019). Therefore, mixed methods are an appropriate method to use, which aligns with the underpinning philosophical approach of this thesis.

Using mixed methods has its advantages compared to using a single method design. Its premise is to combine both quantitative and qualitative designs to create a more rigorous and holistic approach to the research problem (McKim, 2017). For this particular study, a pragmatist philosophical approach allows for sickness absence to be explored in greater detail, accounting for the complexity and multi-faceted nature of sickness absence. The method has been favoured by researchers due to its ability to merge the strengths of quantitative and qualitative methods and alleviate weaknesses whilst providing a wider range and more in-depth data to aid understanding (Creswell & Clark, 2011; Olsen, 2004). Previous studies investigating sickness absence have taken a solely quantitative approach using sickness absence as an outcome in randomised controlled trials (e.g. Biering et al., 2015). Furthermore, economic studies have focused on quantitatively investigating the financial consequences of sickness absence on the economy through prospective cohort studies (Virtanen et al., 2005).

The majority of the research into sickness absence focuses on quantitative methods to identify the prevalence and incidence of sickness absence within specific populations (Michie & Williams, 2003; Schell et al., 2013). However, there is limited research that investigates sickness absence using mixed methods, particularly within the ambulance service. As previously mentioned, there is also a lack of the employee voice regarding the perceptions and experiences of sickness absence within the current literature. This means that the illness experience of individuals is not being fully accounted for, specifically if there are components of sickness absence that are not able to be measured using a questionnaire. Therefore, this study will employ a mixed methods approach to address these gaps and provide a holistic understanding of sickness absence in the ambulance service (Subedi, 2016).

An explanatory sequential mixed methods design will be used in accordance with Creswell, Plano Clark, Gutmann and Hanson's (2003) framework. This framework states that mixed methods research has two distinct phases of quantitative and qualitative data collection, analysis and integration. As part of the explanatory design, the study will begin with a

quantitative phase of data collection and analysis, which will be followed by a phase of qualitative data collection and analysis.

Traditionally within mixed methods research, priority (or weight) is given to the quantitative, qualitative or both phases of the study (Ivankova et al., 2006). Deciding the priority of the approaches can be influenced by the research objectives or through practical considerations, such as access to participants (Azorín & Cameron, 2010). For this thesis, equal weight will be given to both the quantitative and qualitative phase of the research. Priority will be given to both phases as quantitative approaches have the ability to collect numerical data on the frequency and duration of sickness absence, in addition to other key variables. Moreover, the qualitative phase will be able to provide participants' reasons, experiences and perceptions of sickness absence. Together, these phases will provide an opportunity to expand on the association between stress, coping and sickness absence whilst providing insight into participants' experiences and perceptions.

A retrospective, cross-sectional design was chosen for the quantitative phase, with data being collected at one point in time using a self-administered questionnaire survey. Sickness absence rates can often differ depending on the time of year; for example, research has found that sickness absence due to infections such as influenza increase during the winter months (Gianino et al., 2017). Therefore, by taking a snapshot of participants' sickness absence over one particular time-period may help in overcoming this problem. Additionally, this method allows for multiple variables to be collected and analysed such as age, job role, daily hassles and time spent in service from one point in time (SAGE Research Methods, 2019).

For the qualitative phase, semi-structured interviews were chosen to collect data on participants' reasons, experiences and perceptions of sickness absence. Semi-structured interviews were used due to their flexible approach to data collection. Interviews can be shaped using open-ended questions, where participants can discuss their own experiences (DiCicco-Bloom & Crabtree, 2006), whilst participants are allowed certain control over the conversation where new information may be uncovered (Gill et al., 2008).

Throughout this thesis, there will be two methods of integrating the quantitative and qualitative data. Firstly, the research will use a participant selection model (Ivankova et al., 2006), which integrates the quantitative and qualitative phases together by allowing participants to be purposefully selected from the quantitative phase for qualitative phase in order to conduct in-depth semi-structured interviews (Creswell et al., 2003). In particular, the selection of participants will be guided by the quantitative data to represent various levels of sickness

absence, stress and coping styles[9]. Secondly, integration will occur in Chapter 7 when the qualitative findings will be used to explain the quantitative findings (Morgan, 1998).

4.4 Measurement of key variables

The study consists of two independent variables (IV), which included work-related stress (consisting of four levels: workload, perceived control, responsibility and social support) and coping styles (consisting of five categories: rational, emotional, detached, avoidant and mixed) and one dependent variable (DV), sickness absence.

These variables were chosen for this study because of the evidence presented in Chapter 2. With regards to stress, Trybou et al. (2014) and Schell et al. (2013) identified that high levels of stress increases the likelihood of experiencing sickness absence. Early research by Cohen (1991) and Schneiderman et al. (2005) also discovered a link between stress and disease. Chapter 2 presented the stress-reaction hypothesis, which further supports the relationship between increased stress, an inability to cope effectively and sickness absence.

This study includes both work-related and non-work related (daily hassles) stressors to ensure that stress from all areas of life are accounted and controlled for in analysis (Lourel et al., 2009). In particular, the variables of workload, perceived control, responsibility and social support are used to measure overall levels of job stress. As outlined in Chapter 2, these variables are suggested to be the most common causes of stress within the ambulance service (Mahony, 2001; Regehr & Millar, 2007; Sterud et al., 2011; Young & Cooper, 1995).

Traumatic stress was not included as a variable within this study because it is seen as an unavoidable part of the job, which may also attract individuals to the profession (Nirel et al., 2008). Halpern et al., (2009) reported that ambulance staff also view traumatic stressors (such as being faced with a life or death situation) as distinct from operational stressors (such as workload, control and social support) (Avraham, 2014). Additionally, although there is research to suggest that traumatic stressors affect the mental health of employees (Alexander & Klein, 2001), this has been extensively researched, and intervention programmes are already in place to assist staff with these (Hunt et al., 2013; Whybrow et al., 2015).

The following section will provide an overview of the measurement of the variables within this thesis.

[9] The process of the participant selection model will be further described in Chapter 5, section 5.2.1.2

4.4.1 Sickness absence

The Health and Safety Executive (2004) recommend that employers keep a record of employees' sickness absence in order to detect which individuals are off sick, in addition to identifying whether there are any work-related causes to the absence. Hensing (2009) suggests there are two main approaches to measuring sickness absence, which are frequency and duration. Frequency measures the total number or average number of days absent during a specific time period, for example an individual may have three days absent from work in a one-month time period. On the other hand, duration (or length) measures the number of days absent for each occurrence of sickness absence, for example an individual may have an average of three days absent from work in each sickness absence occurrence. Hensing (2009) further states that frequency and duration are used to provide a general overview of sickness absence in addition to identifying patterns and allowing employers to compare sickness absence across employees in the organisation.

Within the workplace there are several methods that organisations use to measure sickness absence. The Bradford Scale has been used to calculate a Bradford Factor score (Equation 1).

$$S^2 \times D = \text{Bradford points score} \quad (1)$$

Within the equation, S^2 is the number of occurrences of sickness absence in a specified time period and D is the total number of absent days that the individual was absent for (Alexis, 2011). For example, if an individual had one sickness absence spell with five days off within 52 weeks their Bradford Factor score would be 5. Within organisations that use this measurement approach, a higher score indicates that an individual may be subject to trigger points. For example, 600 points or more could indicate dismissal (Alexis, 2011).

Arguably, the Bradford Factor score allows for a holistic measure of sickness absence as it considers both the frequency and duration of sickness absence (Shantz & Alfes, 2015). However, one major problem with this measurement is that short and more frequent spells of sickness absence produce a higher score on the Bradford scale. This means that employees who are off more frequently are at an increased chance of reaching trigger points than those who have longer durations of sickness absence (Dowling, 2009). Therefore, it could be argued that the Bradford Factor score unfairly penalises employees who have short-term absences.

As a result of this limitation with the Bradford Factor score, some organisations use an alternative calculation to calculate sickness absence. CIPD (2020) recommend using a lost-

time rate of sickness absence, which calculates a percentage of time that is lost due to sickness absence, also known as a sickness absence rate. This calculation is used by the NHS use an equation to calculate a sickness absence rate (Equation 2) based on the days absent and the days available to work.

$$\frac{\text{Sum total sickness absence days}}{\text{Sum total days available per month}} \quad (2)$$

This equation was used to calculate the ambulance service sickness absence rates presented in Chapter 1 by NHS Digital. This approach allows for a wider comparison between departments, for example by using sickness absence rates a comparison between the ambulance service and nurses' sickness absence rates can be produced. This is not something that the Bradford Factor score allows researchers to do as it is context driven through an organisation's individual trigger points.

One difficulty that is present across both measures of sickness absence is that the measurement considers the number of working days an individual is absent for. This is problematic as the duration of working days vary depending on which occupation is being studied. For example, an office employee who works 37.5 hours per week may have eight-hour working days compared to an ambulance employee who may work 37.5 hours per week but may work three 12-hour shifts. Therefore, these measurements of sickness absence are inconsistent across organisations and there is a need to standardise this measurement to account for comparisons across occupational fields.

The problems regarding sickness absence measurement were highlighted in Chapter 3 as a limitation of the systematic review. The review highlighted a range of measurement units ranging from days to hour and categorised these as continuous and count data. As stated above, there were also concerns surrounding the measurement of working days within a healthcare setting, particular when there are difficulties estimating the number of working hours available. Therefore, one recommendation from the systematic review was to consider using the measurement of shifts. As a result, this thesis intends to measure sickness absence using the number of shifts absent, obtaining count data from participants.

Despite this, there are other problems surrounding the measurement of sickness absence. Previously, research has used raw data, such as the number of days absent from work from employee records or insurance registers (Ariansen, 2014). This data is often regarded as an

accurate report of sickness absence as it is reported by the employee on the day of absence and when they return (Hensing, 2009). Therefore, this could suggest that employee records are valid sources of sickness absence data. However, this information is sometimes difficult to obtain, particularly due to the ethical issues of identifying individual cases. For this thesis, individual sickness absence statistics are essential in determining the participants required for the qualitative interviews through participant selection of individuals with high or low sickness absence rates (Ivankova et al., 2006). As a result, this thesis intends to use self-report methods (e.g. Elstad & Vabø, 2008).

Within self-reported questionnaires, sickness absence is often measured using a single question, such as "how many days were you absent from work?" and may use a specific time period such as a year or six months (Storm et al., 2016). One problem with this stems from the retrospective nature of gathering this sickness absence data.

Arguably, this is problematic for research as participants may experience recall bias, where they may not accurately remember the number of days or hours that they were absent (Mann, 2003). Several methods are suggested to overcome recall bias including the use of an appropriate recall period, such as six months rather than several years (Althubaiti, 2016). As highlighted by Althubaiti, a longer recall period means that participants are less likely to accurately recall information. In the context of sickness absence, a balance is required between the recall period and accounting for seasonal fluctuations in sickness absence (Gianino et al., 2017), which a six-month measurement period allows for.

However, Althubaiti highlights that recall bias may not be completely eliminated and it is important to discuss the implications of this when considering validity of sickness absence measurements and interpreting research findings. Althubaiti (2016) highlights that this is important with regards to validity, suggesting an appropriate recall period between the sickness absence event and the questionnaire means that participants are less likely to under or over-estimate their sickness absence. As a result, this thesis intends to use a sickness absence measurement period of six months in an attempt to overcome recall bias and minimise impacts on the validity of the measure as outlined by Althubaiti (2016). However, implications for this will be further discussed in Chapter 8.

With regards to the objectives of this thesis, this consistent measure of sickness absence across six months will aid in meeting objective two and three. This is because the measurement can be utilised as a count variable and entered into analyses whilst accounting for the six-month time period of absence within the study. This measure will help to establish the extent to which

sickness absence is associated with both stress and coping styles. Moreover, by establishing associations between sickness absence and other variables of interest, will allow for recommendations to be made to improve sickness absence.

Overall, this thesis aims to overcome some of the limitations with relation to sickness absence measurement, such as the use of shifts and measurement within a shorter recall period of six months.

4.4.2 Stress

As outlined within Chapter 2, stress is defined as both a psychological and physiological response to a stressor in an individual's environment (Lazarus & Folkman, 1984; Quick et al., 2001). As a result, both psychological and physiological methods have been used to measure the concept of stress.

Historically, physiological methods have focused on a singular measure (such as heart rate) to determine whether an individual is exhibiting a stress response (Evans et al., 2013). More recently, physiological measurements have been taken using a multitude of biological markers such as cortisol, blood pressure and responses from the adrenocorticotropic hormone (Arvidson et al., 2017).

To measure these biomarkers for stress, researchers have used blood, saliva and sweat to measure cortisol and heart rate variability using electrocardiograms (e.g. Messerli-Bürgy et al., 2018; Thayer et al., 2010). Research has measured these within both laboratory settings, where researchers induce a stress response and within natural settings where researchers measure stress responses in an individual's natural environment. For example, the Trier Social Stress Task (TSST, Kirschbaum et al., 1993) is widely used in research to induce a stress response by asking participants to perform mental arithmetic and deliver a speech to an audience. However, there are several ethical concerns of using the TSST and inducing a stress response in an individual, particularly in relation to the potential harm it may cause participants. In contrast, other studies have measured the physiological stress reaction as the real-world stressor is occurring. For example, Abdelrahman and colleagues (2016) measured physiological stress of surgeons using cortisol and heart rate during a laparoscopic surgery[10].

In their systematic review, Frazier and Parker (2018) highlighted that two out of 22 articles were conducted in real-world settings, suggesting that there is a lack of research that

[10] Laparoscopic surgery, also known as laparoscopic cholecystectomy (SILC), is a procedure that removes the gallbladder

incorporates physiological measurements of stress when individuals are faced with real-life stressors. One possible explanation for this is due to the invasive and time-consuming nature of physiological measurements, which means that it may not be practical to measure responses during a real-life stressful event. Another impact of this is that the mere process of gathering physiological measures, for example through taking blood, may induce a stress response so the reliability and validity of these measures are questionable.

More recently, non-invasive physiological measures have been piloted with researchers identifying that cortisol from saliva is a reliable measure for acute stress responses, whereas measuring substances involved in metabolism through faecal matter is a reliable for measuring stress long-term (Nemeth et al., 2016). However, this study into non-invasive physiological measures was conducted in guinea pigs and the measure was only considered reliable within animal species. Nevertheless, researchers have considered the use of salivary and serum cortisol within human studies as a non-invasive alternative (Bozovic et al., 2013).

It is evident that a range of non-invasive, physiological measures are available to measure stress responses to induced and real-life stimuli. Within previous ambulance research, Bedini et al. (2017) used a physiological approach and collected saliva from ambulance dispatch employees every 15 minutes for two hours for a total of four hours during shifts. Despite this, there were several problems with using these measures in practice. Firstly, if this method was used within the ambulance service it would require a researcher being present on a number of shifts and several calls to patients. Within Bedini's study, participants were dispatch employees, which meant that researchers did not have to go out on the road and visit patients.

Secondly, researchers may not be able to determine stress over a long period of time, such as a month, as it would require a researcher to be present every shift for a month, which is time consuming. Finally, if the aim was to view stress holistically, physiological measures must also be taken when participants are off shift and in their home environment. Participants could collect the saliva themselves, but there could be additional problems with participants remembering to take a sample whilst on shift, at home and how these samples could be stored until the end of the shift. It is for these reasons that physiological measurements of stress are not a viable option for measuring stress within this thesis.

In addition to physiological measurements, there are also a range of psychological measures, which are often used due to the limitations of physiological measurements. Traditionally, these include questionnaires that aim to measure participants' experiences, perceptions and levels of stress through a variety of scales. For example, stress can be measured using generic

questionnaires such as the Perceived Stress Scale (PSS, Cohen et al., 1983), which measures the level of overall stress in an individual's life.

Despite questionnaires offering a flexible approach to measuring stress, they have been criticised for being subjective measures that rely on an individual's interpretation of a stressor (Caldwell et al., 2004). As a result, Caldwell and colleagues suggested that some work-related questionnaires may not be an accurate representation of the working environment and may instead reflect the attitude an individual has towards their environment. For example, if an individual feels they are being treated poorly, they may score negatively on the questionnaire.

Another critique of questionnaires that measure stress is that they focus on broad sources of stress, such as the Perceived Stress Scale, which provides a general measure of stress and is unable to decipher and measure stressors that occur in the workplace and those that occur outside of the workplace. Moreover, the previous empirical evidence and theory presented in Chapter 2 highlights that there are several sources of stress that are more relevant and applicable to the ambulance service. These stressors were workload, responsibility, social support and perceived control. As a result, this thesis required a measure of stress that was able to account for these main stressors present in the ambulance service.

The Generic Job Stress questionnaire is a measure developed by the National Institute of Occupational Safety and Health (NIOSH). When developing the questionnaire, Hurrell and McLaney (1988) highlighted several critiques of previous questionnaires, such as the inclusion of items that measure stressful conditions rather stressors themselves. From this, NIOSH developed a generic job stress questionnaire that is applicable to a range of occupations. The NIOSH Generic Job Stress Questionnaire was compiled using pre-existing questionnaires, that demonstrated acceptable levels of validity and reliability in addition to their use in previous research.

Hurrell and McLaney (1988) reported acceptable reliability for the questionnaire and the sub-scales of interest using Davenport et al's. (2015) outline that when $\alpha = 0$, the test is unreliable and does not have high levels of internal consistency whereas, $\alpha = 1$, means the measure is reliable and measures a unidimensional construct. Heale and Twycross (2015) also suggest that an acceptable alpha coefficient is .70 or above.

Cronbach's alpha for each subscale are as follows: perceived control ($\alpha = .90$), workload ($\alpha = .86$), social support from supervisors ($\alpha = .88$), co-workers ($\alpha = .84$), family and friends ($\alpha = .85$) and responsibility ($\alpha = .62$). On the whole, these subscales provide acceptable levels of

internal consistency based off the notion that an acceptable alpha coefficient is .70 or above (Heale & Twycross, 2015). Responsibility does not meet this alpha level, however, Tavakol and Dennick (2011) highlight that a low alpha value is not necessarily a cause for concern but may reflect a small number of items in a scale. This is the case for the responsibility scale within this questionnaire, which only contains four items compared to the perceived control scale that contains 16 items.

A reliability analysis was also conducted for the current study and reflected the following Cronbach's alpha for each scale: Perceived control (α = .91), workload (α = .78), social support (α = .87) and responsibility (α = .78). Considering the criteria above, this questionnaire demonstrates acceptable internal consistency for the current study.

In addition to obtaining a questionnaire that measured work-related stress, a measure of daily stress was also required in order to provide a holistic measure of stress. Questionnaires such as the Life Stressors and Social Resources Inventory- Adult Form (Moos et al., 1988) and the Weekly Stress Inventory (Brantly et al., 1987) were considered but there were some limitations with regards to the practicalities of using such questionnaires. For example, the Life Stressors and Social Resources Inventory- Adult Form required a licence to use and was unable to be distributed online. Furthermore, the Weekly Stress Inventory measured daily stress over a period of one week. As the dependent variable, sickness absence, was to be measured over six months, this questionnaire did not provide an appropriate timescale.

As a result, this thesis intends to use The Daily-Hassles Scale-Revised (Holm & Holroyd, 1992) to measure the daily hassles of individuals on several subscales. One strength of this questionnaire is that it measures a broad range of stressors. For example, there are sub-scales relating to health, financial situation and family. Cronbach's alpha for covert hassles (including the sub-scales of inner concerns, time pressures and health hassles) demonstrated good internal reliability (α = .88). Similarly, Cronbach's alpha for overt hassles (including the sub-scales of environmental hassles, financial concerns and family hassles) also demonstrated good internal reliability (α = .80).

A reliability analysis was conducted for the current study and Cronbach's alpha demonstrated the following: Inner concerns (α = .79), financial concerns (α = .79), time concerns (α = .83), work hassles (α = .73), environmental concerns (α = .70) and family hassles (α = .85). According to the guidelines by Heale and Twycross (2015), these suggest an acceptable level of internal consistency for the current study.

Due to the limitations of utilising physiological measurements of stress within an ambulance setting, this thesis intends to measure stress utilising two self-report questionnaires. With regards to the thesis' objectives, using two measurements of stress will be beneficial in meeting objective two and objective three. Firstly, both measures provide a holistic measurement of stress within all aspects of an individual's life. This will help meet objective two as stress occurring in the home environment is likely to affect the working environment (Ragins, 2008), therefore it needs to be measured and accounted for in the analysis. By including these measures, the aim of the thesis can be met as the extent to which stress influences sickness absence can be tested. **4.4.3 Coping styles**

Unlike stress, there are no physiological measures available to measure an individual's coping style. As the definition of coping suggests, coping is a combination of personality, locus of control, and perception of the stressor (Sahler & Carr, 2009). Coping is inherently a psychological process that manifests itself through latent measures, such as thoughts and actions (Lazarus, 2006). As a result, academics have used self-report questionnaires to gather information on an individual's coping strategies and coping styles.

Within certain populations, such as individuals with brain injury or stroke, alternative measures of coping have been used. For example, Krpan et al. (2010) measured coping styles using a neurological test called the Baycrest Psychosocial Stress Test (BPST). The BPST includes a 10-minute test period where participants' coping was observed, followed by 10 minutes where participants were asked to deliver a speech. Participants were provided with two packages, one which would allow them to engage in problem-focused coping (such as note paper and information about the speech they should give) and avoidance coping (such as a magazine or puzzle).

This is a novel measurement of coping as it measured participants' immediate coping behaviour. However, there is limited evidence to suggest that the BPST is a reliable or valid measure outside of the sample in the original study. Furthermore, the BPST does not take into account the full range of coping behaviours and styles that participants could use in a stressful situation. For example, there was no condition where participants could choose to engage in a detached coping style. The conditions were also not representative to everyday stressors and the coping styles observed may have only occurred due to the specific stressor, which was being asked to engage in public speaking.

Collecting data on coping behaviours, styles and strategies using this method of observation originated within the early 1960s. For example, Visotsky et al. (1961) observed patients and

how they coped with polio on hospital wards. Since then, Delaney et al. (2006) developed a guide to assessing coping and stress responses within children and parents through observation and included items such as "identifies ways to cope with perceived stress" (pg. 197). However, these observational methods have limitations with regards to overt observation, when participants are aware their behaviours are being observed. The problem with this is that participants may change their behaviour, which may be particularly problematic if observation was carried out in the ambulance service as staff would know they were being observed.

For this thesis, using the BPST or other observation methods is not a practical method of measuring coping styles within the ambulance service. Similar to the reasons stated about measuring physiological stress in ambulance employees, coping would have to be measured on more than one occasion. The BPST or other methods of observation could be used within the field, but there would be no guarantee these observations were accurately measuring a particular coping style or behaviour. This is because the researcher's interpretation of the coping style or behaviour would be present. Moreover, there are also limitations in identifying a typology of coping behaviours, and as a result, there is no certainty that this is an accurate and reliable measure.

Several coping questionnaires such as the Multidimensional Coping Inventory (Endler & Parker, 1990) and the COPE Inventory (Carver et al., 1989) were either unable to group behaviours or did not reflect the full extent of coping styles available and only focused on problem or emotion-focused coping. Other questionnaires such as the Ways of Coping Checklist (Folkman & Lazarus, 1980) did not include the breadth of coping styles and excluded avoidant coping behaviours. The aim of this thesis is to consider a range of coping styles, particularly avoidant coping, due to the theory surrounding the notion that sickness absence is an avoidant coping strategy (e.g. Kristensen, 1991). As a result, it is essential that the coping questionnaire contained items that measured avoidant coping.

Therefore, the Coping Styles Questionnaire (CSQ, Roger et al., 1993) was chosen to measure participants coping styles. The questionnaire demonstrates good internal reliability for all sub-scales including rational (α =. 81), detached (α = .77), emotion (α = .79), and avoidance (α = .66) (Elklit, 1996).

A reliability analysis was conducted for the current thesis and demonstrated the following Cronbach's alpha levels: Rational (α = .84), detached (α = .85), emotion (α = .90) and avoidance (α = .83). With reference to the guidelines from Heale and Twycross (2015), this suggests the questionnaire has acceptable internal consistency.

In order to meet the aim and objectives of this thesis, the Coping Styles Questionnaire allows for specific coping styles to be analysed in relation to sickness absence. This is particularly important with regards to avoidance coping as evidence suggests this is related to sickness absence (e.g. Kristensen, 1991). Therefore, including a wide range of coping styles and their associated behaviours and actions are useful to be able to distinguish statistical effects between these in relation to sickness absence.

4.5 Sampling considerations

To ensure this thesis recruits participants that are going to aid in meeting and answering the research aims and objectives, there are several aspects of sampling to consider. Firstly, the thesis must consider the ambulance services that will be recruited to the study and secondly, the type of employee required.

This thesis intended to recruit participants from an ambulance service in the United Kingdom. In principle, obtaining a representative sample of ambulance employees would require a random sample of participants from all 13 ambulance services in the United Kingdom. Previous sickness absence research (e.g. Stilwell & Stilwell, 1984) have demonstrated the ability to use one ambulance service as the population, due to time and resource constraints. As a result, this thesis intends to recruit an opportunity sample from one ambulance service in the United Kingdom.

This particular ambulance service was deemed an appropriate research site due to their commitment to improving staff health and wellbeing. For example, they were the first ambulance service in the country to sign the Blue Light Pledge to reduce mental health stigma (Dodd, 2017). Secondly, the proximity of the service to the university was an important, practical consideration. This meant that materials could be disseminated to ambulance stations with minimal cost. The locality also increased the likelihood of participants choosing to participate in a face-to-face instead of a telephone interview.

With regards to the inclusion criteria for participants, previous research has argued that part-time staff may not be exposed to the breadth of occupational stressors and may also have more time to recover from stressors experienced in the workplace (Barck-Holst et al., 2017). Moreover, the measurement of sickness absence that will be utilised within the thesis (number of shifts absent in six months) may not be an accurate measure for part-time staff who may work a smaller number of shifts compared to full-time employees. As a result, this thesis intended to recruit full-time members of staff, to ensure the consistency in stress exposure and sickness absence measurement.

Moreover, a decision was made to exclude participants who worked in support roles (such as human resources or administration). This decision was made as these roles do not include working with or alongside patients and it cannot be established whether support staff experience the same or similar work-related stressors as front-line ambulance employees.

4.6 Ethical considerations

Ethical approval was sought from the University of Lincoln School of Health and Social Care Ethics Committee in addition to the Health Research Authority (HRA). The Research, Development and Innovation Team also provided confirmation of their capability and capacity to host the research (Appendix C).

The ethical principles in the British Psychological Society's Code of Ethics and Conduct (British Psychological Society, 2018) and the Code of Human Research Ethics (British Psychological Society, 2014) were followed throughout this research. A discussion of these principles are provided below.

4.6.1 Informed consent

Prior to the research being conducted, participants were provided with a participant information sheet (see Appendix D for participant information sheet and consent form for the quantitative phase and Appendix E for the qualitative phase), which highlighted the main aims of the study and what was required from the participant. Participants were required to provide written or verbal consent (if taking part in qualitative interviews via telephone) prior to taking part in the study.

4.6.2 Confidentiality

This research involved a sample of ambulance service employees who provided confidential and personal information on their levels of stress, coping styles and sickness absence. In accordance with the Caldicott Principles, additional information not required for the research was not obtained from participants. Due to the sensitive nature of the information provided the data was anonymised with participants creating their own identifiable pseudonym. All data was kept in accordance with the Data Protection Act (1998) and the Data Protection Act (2018).

In this study, the questionnaire data from the quantitative phase was used to recruit participants to a semi-structured interview. Personal information such as participants' score on the job stress, coping styles and sickness absence questionnaires were used to identify potential participants for the qualitative phase of the research. Participants were made aware of this in

the information sheet and were asked for their consent to be contacted. Any participants who did not wish to be contacted were excluded from the qualitative phase of the research.

4.6.3 Risk to participants

During the research period, there was a risk that participants may experience sickness absence or be returning to work following a period of absence. If a participant had a period of sickness absence, they were reminded that they were able to withdraw from the research or, if they would like to continue with the research then any interviews could be rescheduled.

Participants were required to provide information about their occupation which may have had an effect on their perception of their employment or relationships within the workplace. To counteract this, individual case data was not shared with any third party including other employees or their employer. However, participants were made aware that the data collected would be used in a doctoral thesis and disseminated as academic papers in journals or at conferences. Participants also consented to a final copy of the thesis being provided to the ambulance service.

This research did not anticipate any physical or psychological harm to participants. However, due to the nature of the research, there was a potential for participants to discuss sensitive topics, which some participants may find distressing. To overcome this, participants were given the opportunity to withdraw from the research at any time. To minimise this risk further, participants were provided with contact details of the support services available to them (such as the Mind Blue Light Infoline).

4.7 Summary

Chapter 4 began by discussing the philosophical approach of pragmatism. Given the limited evidence in this area, this chapter argued that this thesis requires a holistic and flexible approach to its research methods. This section has provided a brief summary of the decisions made with regards to the design, measurement and sampling that will be employed as part of this thesis. The next chapter (Chapter 5) provides an in-depth overview of the specific methods employed in the quantitative and qualitative phases.

Chapter 5 General Methods

Chapter 3 presented a systematic review, which investigated existing interventions that reduced sickness absence among healthcare workers. Findings indicate that there are a number of effective interventions that demonstrated a reduction in sickness absence, such as an exercise-only intervention involving Tai Chi (Palumbo et al., 2012), a multicomponent intervention programme incorporating behaviour change and exercise (Roussel et al., 2015) and an influenza vaccination intervention (Wilde et al., 1999). By applying an applicability and transferability framework (Wang et al., 2006), it became apparent that these interventions were not applicable to the ambulance service. Applicability and transferability could not be confirmed due to several barriers, such as the location and timing of intervention delivery and perceptions of employee change practices. As such, there is a need for further research into sickness absence in the context of the ambulance service in order to develop a specific intervention.

As previously stated, there is limited research that has focused on sickness absence in the ambulance service. Research has either focused on the causes of sickness absence (Stilwell and Stilwell, 1984) or the general health of the employee (Betlehem, 2014; Pek et al., 2015). The stress-reaction hypothesis suggests that sickness absence occurs as a response to increased stress as a result of demands in the workplace (Schaufeli et al., 2009). Theory has established a clear link between increased stress and illness (e.g. Selye, 1936; Lazarus & Folkman, 1984; Bakker et al., 2007; Cotton & Hart, 2003) in addition to physiological and psychological research (e.g. Dhabhar, 2009; Cohen et al., 2012). However, previous research has focused on the general population, other healthcare employees or is conducted primarily within Nordic countries (Elstad & Vabø, 2008). Therefore, there is a lack of evidence from the ambulance service, in particular within the United Kingdom.

As a result of these gaps in the research, this explanatory sequential mixed methods study aims to address these limitations by:

- Focusing on a population of ambulance employees in the United Kingdom
- Including the employee voice and focus on their experiences, perceptions and reasons for sickness absence in addition to exploring their recommendations for improving sickness absence
- Using the number of shifts absent as a novel measurement of sickness absence

This chapter presents the methods of the explanatory sequential mixed methods study, which aims to:

- Identify the effect of stress and coping upon sickness absence
- Explore employees' experiences, perceptions and reasons for sickness absence

The first section of this chapter will focus on the methods of the quantitative phase of the study, whilst the second will focus on the methods of qualitative phase.

5.1 Quantitative phase: Investigating the association between stress, coping and sickness absence

The quantitative phase aims to answer the following research question: To what extent are stress and/or coping styles associated with sickness absence? Based on the current literature, the study hypothesises that:

- Hypothesis 1 (H_1): Ambulance employees with higher levels of work stress (workload, perceived control, responsibility and low social support) will report a greater number of shifts absent across six months
- Hypothesis 2 (H_1): Ambulance employees with avoidant coping styles will report a greater number of shifts absent across six months

5.1.2 Method

5.1.2.1 Design

An independent measures, retrospective, cross-sectional research design was used to investigate the association between work-related stress, coping styles and sickness absence. Data were collected using self-administered online questionnaires, which were distributed to clinical and management employees.

The study consisted of two independent variables (IV), which included work-related stress (comprised of four levels: workload, perceived control, responsibility and social support) and coping styles (consisting of five categories: rational, emotional, detached, avoidant and mixed) and one dependent variable (DV), sickness absence.

5.1.2.2 Participants and sampling

An opportunity sampling method was used to recruit full-time employees from one UK ambulance service. Inclusion criteria for this study included employees who were employed in any clinical (e.g. paramedic), operational (e.g. dispatch officer) or managerial (e.g. team leader)

position. Participants were excluded if they worked in support roles (e.g. human resources or administration) as these jobs do not include working with or alongside patients. Moreover, it cannot be established whether support staff experience the same or similar work-related stressors as front-line ambulance employees.

As previously discussed, research into stress has argued that part-time staff may not be exposed to the breadth of occupational stressors and also may have more time to recover from stressors experienced in the workplace (Barck-Holst et al., 2017). In light of this, employees were only included if they were employed full-time.

A sample size estimation was performed based on the guidance from Peduzzi, Concato, Kemper, Holford, and Feinstein (1996). Based on the assumption that there are two independent variables and the proportion of positive cases (i.e. the percentage of people who have experienced sickness absence) is 0.20 (20%), the minimum number of cases would be 100[11]. Therefore, this study aimed to recruit 100 participants to this study.

Overall, six recruitment cycles were implemented from October 2017 to May 2018 (Figure 12, Appendix F).

[11] Peduzzi et al. (1996) suggest using the following equation $N = 10k / p$, where k equals the number of independent variables and p equals the proportion of positive or negative cases

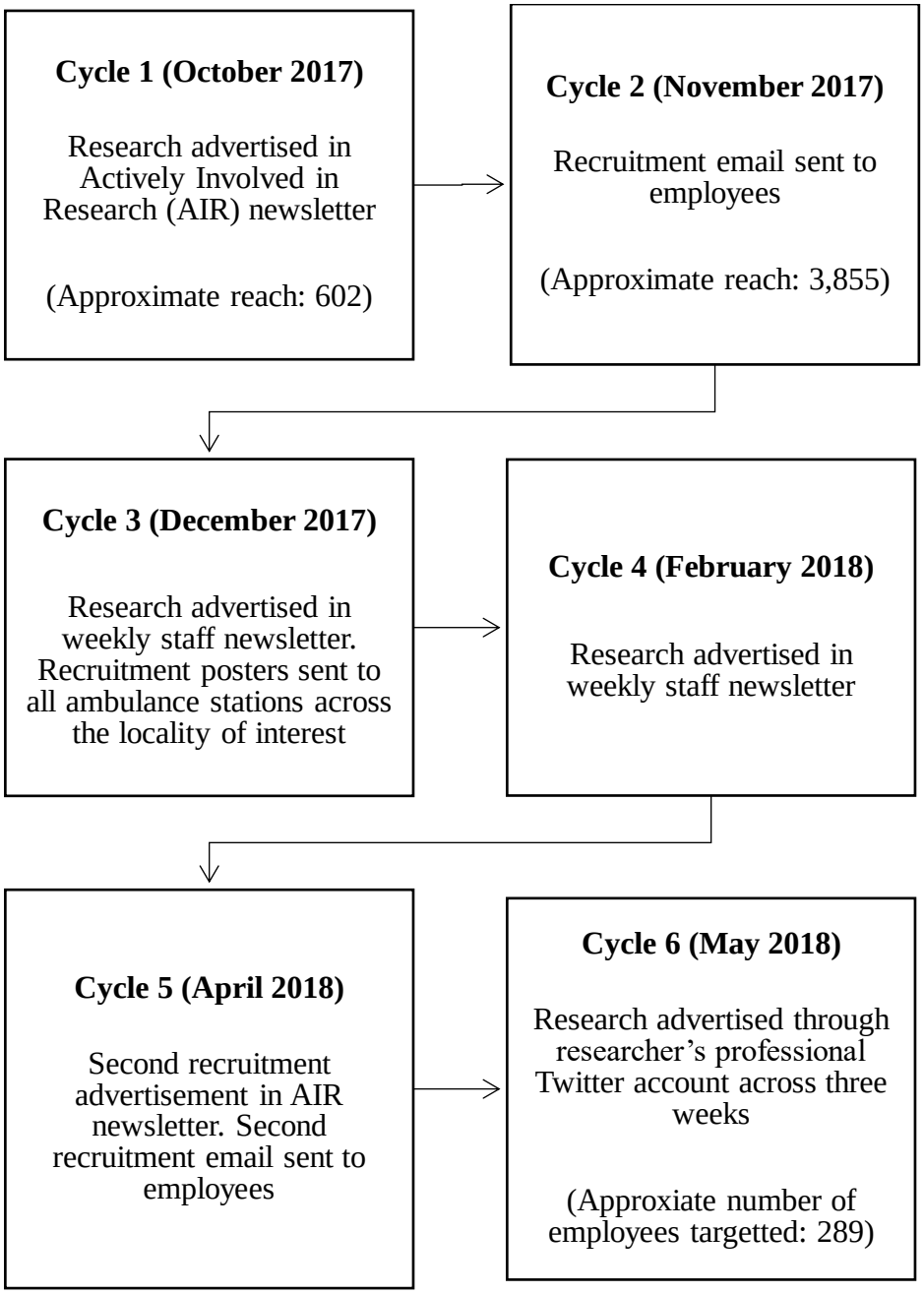


Figure 12. Participant recruitment cycles between October 2017 and May 2018

5.1.2.3 Materials

Data were gathered on demographics, work stress, daily stress, coping styles and sickness absence.

Demographic data collected from participants included: age (e.g. "What is your age?"), sex (e.g. "What is your sex?"), time spent in service (e.g. "How long have you worked for your present employer?"), job role (e.g. "What is your current job title?"), number of shifts per week

(e.g. "How many shifts do you work per week?"), shift pattern (e.g. "Tick the description that comes closest to your present work shift"), shift rotation pattern (e.g. "If you work on a rotating shift, what rotation pattern do you follow?"), overtime hours (e.g. "How many hours overtime, on average, do you work in your job in an average week?") and health conditions (e.g. "Within the past twelve months, has a doctor ever treated you for or told you that you had the following conditions?") (Appendix G).

Participants' levels of work stress were measured using four subsections of the NIOSH Generic Job Stress Questionnaire (Hurrell & McLaney, 1988). The NIOSH Generic Job Stress Questionnaire contains 13 measures of occupational stress that can be used as individual subscales as seen within Fujino (2001) on their work in job stress within permanent night workers and Saijo (2007) in their study into Japanese firefighters. A 16-item perceived control scale (e.g. "How much influence do you have over the variety of tasks you perform?"), a 7-item workload scale (e.g. "How often do you experience lulls in your workload throughout your shift?"), a 4-item responsibility scale (e.g. "How much responsibility do you have for the welfare of others?") and a 12-item social support scale (e.g. "How easy is it to talk with your immediate supervisor/boss?") were used in the questionnaire (Appendix H). Participants answered items using a 5-point Likert scale ranging from 1 (very little, don't have such person, hardly any) to 5 (very much, a great deal). Participants were not asked to consider a specific time period in which stressors may have occurred. Items were scored by computing the average with some reverse scoring. For the perceived control, workload and responsibility scales, a higher score on the scale indicated more work stress. A lower score on the social support scale indicated lower levels social support and higher levels of work stress.

The frequency and severity of daily hassles were measured using the 36-item Daily Hassles Scale-Revised (Holm & Holroyd, 1992). Participants answered items using a 5-point Likert scale ranging from 0 (did not occur) to 5 (occurred, extremely severe). The Daily Hassles Scale-Revised consists of six sub-scales including: inner concerns (e.g. "Concerns about inner conflicts"), financial concerns (e.g. "Not enough money for basic necessities"), time pressures (e.g. "Too many things to do"), work hassles (e.g. "Job dissatisfaction"), environmental hassles (e.g. "Pollution") and family hassles (e.g. "Problem with one's children") (Appendix I).

Frequency of daily hassles was calculated by counting the number of hassles that participants had experienced. Severity of hassles was calculated by adding the values of the hassles together. A higher score on the frequency and severity scales indicated more daily stress.

Coping styles were measured using the 60-item Coping Styles Questionnaire (Roger et al., 1993) (Appendix J). Participants answered items using a 4-point Likert scale ranging 0 (Never) to 3 (Always). The Coping Styles Questionnaire consists of four coping subscales including: Rational coping (e.g. “Just take one step at a time”), emotion coping (e.g. “Cry, or feel like crying”), detached coping (e.g. “Just take nothing personally”), and avoidance coping (e.g. “Do something that will make me feel better”). Participants were asked to choose a response that demonstrated how they would typically respond to stress. Coping styles were established based on the frequency of items selected. If participants scored highly on two coping styles, they were placed in a mixed coping styles group.

Sickness absence was measured using a questionnaire that asked participants about current absences (e.g. "Are you currently off work sick?"), causes of absence (e.g. "If yes, why are you currently off sick?"), and total absences in the past six months (e.g. "Over the past 6 months, how many shifts have you been off sick in total?") (Appendix K). Rates of sickness absence were then computed by using the number of shifts off sick in the past six months, divided by the number of shifts available to participants.***5.1.2.4 Procedure***

Participants were initially contacted through a service research newsletter, the Actively Involved in Research (AIR) newsletter, in October 2017. Subsequent contact was made with participants through an all staff email sent directly to employees’ email addresses from the Research and Development Office (see Figure 12 for an overview of the recruitment cycle). The emails included an introduction to the study, a participant information sheet, a consent form and a link to the online survey. The online platform of E-Survey was used to host the questionnaire. Participants had the opportunity to complete the online questionnaire or return their questionnaire by post. Informed consent was obtained from all participants before taking part in the questionnaire. Postal responses were limited, possibly due to the time constraints and access to printing resources at home or work. Consequently, the online questionnaire served as the most effective method of data collection. **5.1.3 Data analysis**

Regression models are used in research to analyse the relationship or association between independent and dependent variables. More specifically, regression helps determine if changes in the dependent variable can be explained using one or more independent variables (Cook & Weisberg, 1999). The level of measurement of the dependent variable is typically used to establish which regression analysis to perform (Salkind, 2019). In this study, the aim was to see whether there was an association between work-related stress (workload, perceived control, responsibility, social support), coping styles and sickness absence. A simple linear regression

analysis was deemed unsuitable for the data because there were multiple independent variables (Hess & Hess, 2017). Therefore, a multiple linear regression was considered.

Assumption tests on the data indicated that the sickness absence data were not normally distributed. In particular, the data reflected a strong negative skew (Appendix L). In order to improve the distribution, data transformations such as the Box-Cox method (Box & Cox, 1964) was considered, however, as the variable contained zero values, this transformation was not possible. Therefore, alternative parametric methods of analysis were considered that could analyse the data despite a skewed distribution.

Generalised linear models (GLM) are a family of regression models that were developed by Nelder and Wedderburn (1972) for dependent variables with non-normal distributions (Dunteman & Ho, 2006). The dependent variable in this study, although continuous, was deemed count data as it measured the number of shifts off sick over six months. A generalised linear model of Poisson regression was considered as an alternative method of analysing the count data, but this was not possible due to overdispersion. Overdispersion occurs when count data has a large number of zeros in the data set, which can negatively skew the data when applying other types of regression models (Hoef & Boveng, 2007). To overcome this, a negative binomial regression was used to analyse the data.

As previously established, a regression model is used to determine the variation in the dependent variable that can be explained by the independent variables. However, as outlined in Chapter 2, the variables of sickness absence, work stress and coping styles do not exist in isolation but interact with other variables such as age, sex and time spent in employment. Establishing relationships between the variables of interest requires consideration of the confounding variables that may impact the overall strength and direction of the relationship (Pourhoseingholi et al., 2012).

Directed acyclic graphs (DAG) are used within research to identify confounding variables that require adjustment in statistical modelling. DAG models allow for the consideration and identification of possible variables and links prior to formal investigation (Evans et al., 2012). For each DAG, the outcome and exposure can be set for each model. The independent variables were chosen as the exposure, and the dependent variable was established as the outcome. For this study, relationships between variables that had been established in previous research and theory were used in the graphs.

5.1.3.1 An example of a Directed Acyclic Graph

Directed Acyclic Graphs were created using DAGitty (Version 2.3) (Textor et al., 2017). For this particular example, the exposure is set as workload (stress), and the outcome is set as sickness absence[12].

The Directed Acyclic Graph (Figure 13) demonstrated that the minimal adjustment for estimating the relationship between sickness absence and workload stress needed to include age, perceived control, coping styles, sex, job role, responsibility, severity of daily hassles, shift pattern, social support and time spent in service.

[12] For a list of all DAG models created, see Appendix Q [13] It is important to note that some participants were diagnosed with multiple health conditions

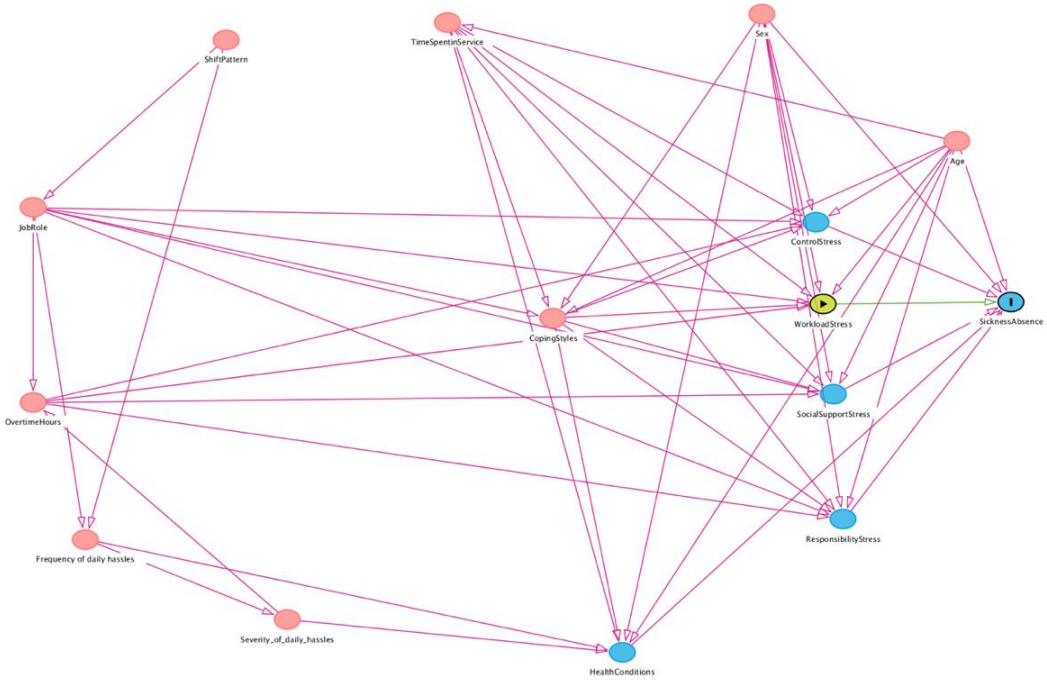


Figure 13. Directed Acyclic Graph showing potential confounding variables for sickness absence (outcome) and workload (exposure)

5.1.3.2 Negative binomial regression model

A negative binomial regression was performed, which included the independent variables (workload, perceived control, responsibility, social support and coping styles), the dependent variable (sickness absence) and any appropriate adjustment variables. Due to sickness absence being measured across a period of six months, an offset variable was also included to take into account the time period. Within generalised linear models, a log transformation of the exposure (number of shifts available in six months) becomes the offset variable and is entered into the regression model (Anderson et al., 2007).

Dummy variables were created for categorical variables (such as coping style) to ensure that comparisons between the groups could be made (Hardy, 1993). By creating dummy variables, a reference category can be chosen to compare against other categories. Garson (2014) provides a guide to selecting a reference category stating that it should not be a category defined as 'other' because it is not specific and that the size of the category should not be small. Based on these guidelines, the largest category was chosen as the reference category except for age, where the largest category was ‘prefer not to disclose’. For age, the second largest category was chosen. An overview of reference categories can be found in Chapter 6 (Table 12).

5.2 Qualitative phase: Exploring employees' experiences, perceptions and reasons for sickness absence

This qualitative study aimed to investigate employees' perceptions, experiences and reasons for sickness absence whilst exploring how sickness absence could be reduced in the service. The qualitative phase aimed to address two research questions:

- What are employees' reasons, experiences and perceptions of sickness absence?
- What do ambulance staff perceive should be included in an intervention to target sickness absence?

5.2.1 Method

As outlined in Chapter 4, this thesis is aligned with the pragmatic approach, which acknowledges the existence of reality but understands that it is constantly changing due to the actions and experiences of individuals (Morgan, 2014). A qualitative approach with a pragmatist lens would assist in gaining a better understanding of sickness absence through those who have directly and indirectly experienced it (Castleberry & Nolen, 2018). As a result, this qualitative phase utilised a semi-structured interview approach to explore participants' reasons, experiences and perceptions of sickness absence.

5.2.1.1 Participants and sampling

A stratified purposeful, maximum variation sampling method was used to recruit participants to the qualitative phase. Patton (2002) described this method as an approach to "capture major variations rather than to identify a common core" (pg. 240). In contrast to other approaches, such as snowball sampling, which focuses on similarities between participants, a stratified purposeful approach allows for participants to be recruited with diverse characteristics (Suri, 2011). This method has also been used with mixed methods research as an approach of merging the quantitative and qualitative phases of research (Palinkas et al., 2015).

The process of maximum variation sampling maps participants' characteristics onto a sampling frame, where participants are then selected for recruitment by identifying attributes that are different to others (Benoot et al., 2016). The purposive aspect of this sampling approach allows for specific domains of interest to be stratified (Palinkas et al., 2015; Robinson, 2014). For example, this qualitative study aimed to sample ambulance employees to capture maximum variation in sickness absence, work stress (workload, perceived control, responsibility and social support) and coping styles (rational, emotional, detached, avoidance and mixed).

Participant sampling was completed using a sampling frame, which was used to map out domains of interest (as highlighted above) in addition to participants' job categories (i.e. clinical/operational and management). An example of the sampling frame is presented in Figure 14. Additional sampling frames that were used to recruit participants can be found in Appendix M.

The median sickness absence rate (M = 2.08) was used to classify participants as having high (the median or above) or low (below the median) sickness absence. The median sickness absence rate was chosen as the measure of central tendency due to large variations in sickness absence data among participants. Using other methods of central tendency, such as the mean, is problematic when data is skewed as it is particularly susceptible to high variability in data points (McGreevy et al., 2009). Within the current study, assumption checks indicated that the sickness absence data were not normally distributed and indicated a strong negative skew, therefore using the mean was not appropriate and the median was instead used to classify participants.

Similarly, with work stress, the median for workload (M = 3.86), perceived control (M = 2.14), responsibility (M = 3.38) and social support (M = 3.67) was used to classify participants into high or low categories. Coping styles were also included in the frame categorised by subgroup (e.g. rational, detached, avoidant, emotional and mixed).

Once participant characteristics were mapped onto the sampling frame, the researcher systematically selected participants using an Excel spreadsheet and selected every second participant (Martínez-Mesa et al., 2016). For example, by using the sampling frame in Figure 14, seven participants with high sickness absence, high workload and rational coping styles, were invited to interview.

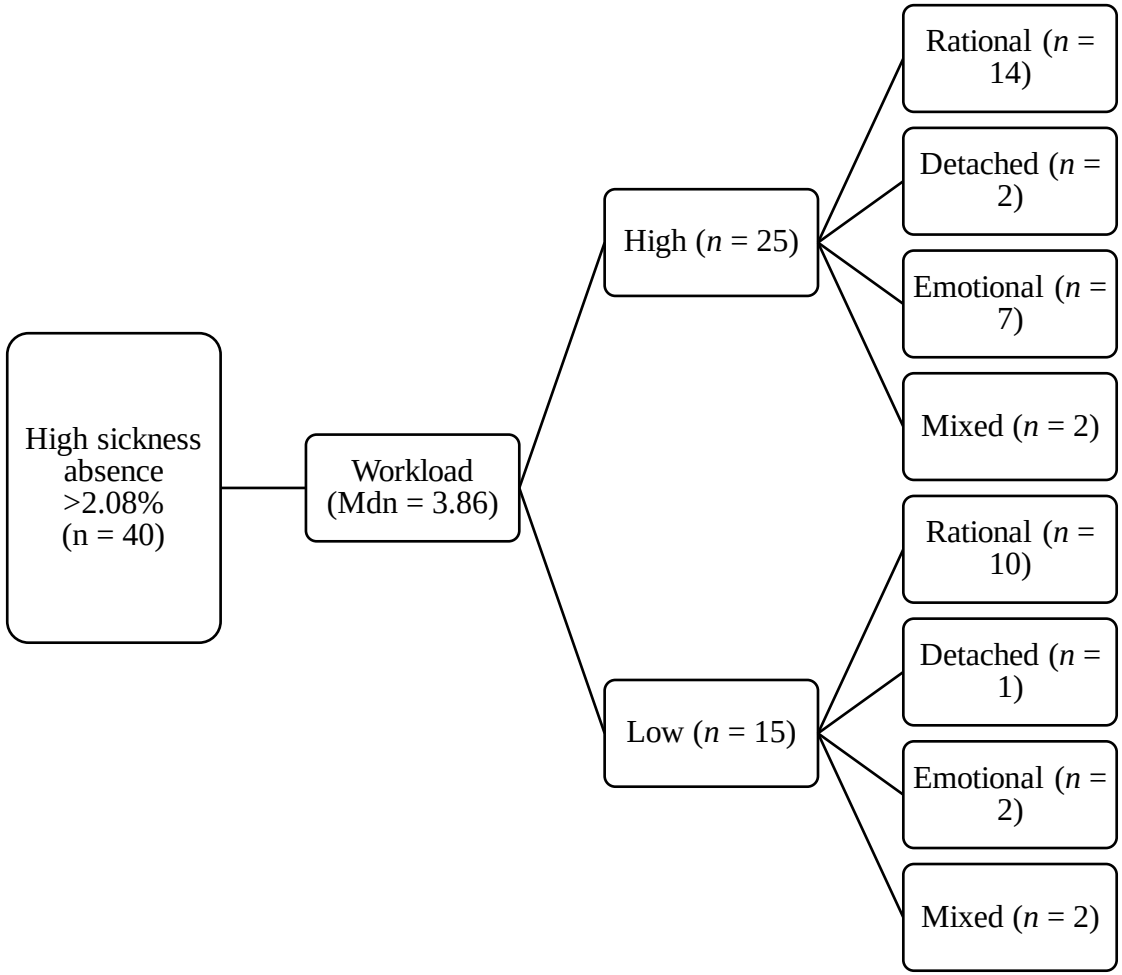


Figure 14. An example of a maximum variation sampling frame for high sickness absence (>2.08%) and workload

With regards to establishing an appropriate sample size for the qualitative phase, guidance was sought from Malterud et al. (2015) who discussed the use of information power to determine an adequate sample size, rather than relying on data saturation methods originally designed for other analyses, such as grounded theory. Malterud et al. (2015) states that information power concerns itself with the study's aim, the specificity of the sample, the quality of dialogue and the strategy of analysis.

The research aim for the qualitative phase is broad as it aims to investigate the reasons, experiences and perceptions of sickness absence. However, the participants will be recruited from a specific pool of participants that took part in the quantitative phase. Moreover, as this study utilised a maximum variation sampling method, participants will have to have specific characteristics, such as high levels of sickness absence. With regards to the quality of the dialogue, this is difficult to determine before data collection however, the researcher has experience conducting qualitative interviews and has experience relating to this subject matter (through analysing the quantitative data). The research is also supported by a supervisory team with expertise in qualitative methods. Therefore, based on these considerations, a sample size of between eight and 12 participants was established, which is the average number of participants also recruited in similar, qualitative samples (e.g. Coxon et al., 2016).

5.2.1.2 Materials

Prior to the qualitative interviews being conducted an interview schedule was designed (Appendix N). Questions and prompts were created based on the research questions, objectives and were informed by the literature review and theoretical framework (Liem, 2018).

The theoretical framework (Figure 9) provided an amalgamation of theories that helped directly or indirectly explain the relationship between experiencing stress, a lack of coping styles and subsequent sickness absence. As a result of this, the interview schedule was informed by these areas. For example, within the theoretical framework high demand and low control were identified as areas that contributed to the stress an individual experienced. Therefore, questions asking participants specifically about their workload and demands were included in the interview schedule.

Similarly, individual differences (such as personality and control over the stressor) were important mitigating factors that helped an individual in their exposure to stress and in their evaluation of coping resources. Therefore, questions were asked to participants about their personal experiences of stress and how they were able to cope.

A pilot interview was conducted in April 2018 with a Research Paramedic to assess the suitability and relevance of the questions. The interview schedule was also discussed with other ambulance service professionals who were not involved in the research. Using feedback from the pilot interview, separate questions were included for managers (e.g. "What do you think of this [sickness absence] policy?") and initial questions about the participant's job role and responsibilities were also included (e.g. "Could you please describe your current job role?").

Interviews via telephone and face-to-face were audio recorded with a Digital Voice Recorder and transferred to Express Scribe software for transcription.

5.2.1.3 The interviewer

The interviews were conducted by a 25-year old PhD student who had no previous clinical experience and did not work for the ambulance service. However, the interviewer had engaged in two ambulance observations, where they accompanied front-line paramedics during their 12-hour shifts.

5.2.1.4 Establishing trustworthiness

As qualitative research is founded on smaller sample sizes compare to quantitative research, it is important to consider how the trustworthiness can be established in relation to the qualitative results. Leydens et al. (2004) suggested establishing trustworthiness is determining whether researchers have “accurately described the settings, events [and] participants’ perspectives” (p. 67).

The current qualitative study established trustworthiness through purposeful sampling and peer evaluation (Lincoln, & Guba, 1985). Using maximum variation sampling allowed for the recruitment of participants who were knowledgeable and had, either directly or indirectly, experienced sickness absence. Furthermore, peer evaluation allowed for peers (e.g. supervisors) to examine the interpretations of research data throughout the qualitative phase. As a result, using both of these approaches allows this qualitative phase to establish trustworthiness.

5.2.1.5 Procedure

Participants were recruited to the study using the sampling frame (Figure 14), selected based on their characteristics and invited to take part in the semi-structured interview. Participants were contacted through telephone and email and were provided with a participant information sheet and consent form. Participants were offered a choice between face-to-face interviews at the University of Lincoln or telephone interviews.

Telephone interviews have been criticised in the literature for lacking normal conversational cues such as body language; however, research has demonstrated that there is no difference in data collected compared to face-to-face interviews (e.g. Vogl, 2013). Research has also suggested that participants enjoy the use of telephone interviews as it allows them to be more honest and open with their answers (Ward et al., 2015). As a result, telephone interviews were offered to participants as an alternative method for face-to-face interviews. This was to ensure that participants who were currently off sick could participate in the research and that individuals who were unable to travel to the university were able to participate (Musselwhite et al., 2007).

Face-to-face and telephone interviews were conducted at the University of Lincoln in a seminar room, which remained consistent throughout all of the interviews (Elwood & Martin, 2000). After the interviews were conducted, the audio was transcribed verbatim. Punctuation and non-verbal cues (such as laughter) were excluded to ensure that these did not change the meaning of the text (Braun & Clarke, 2006). Data were also cleaned before analysis as outlined by Sandelowski (1995) by removing repetitions and adding words to aid in understanding. Personal or identifiable information, such as names and places, were also anonymised and removed from the transcript. Within the transcripts, additional words to aid understanding were included in square parentheses […], and personal or identifiable information is indicated with [redacted].

5.2.2 Data analysis

Data were analysed using thematic analysis in accordance with Braun and Clarke's (2006) framework. The analysis utilised an inductive approach where codes and themes were generated from the data and the researcher did not apply a pre-existing analytical framework (Nowell et al., 2017). In accordance with Braun and Clarke's framework, an inductive approach allowed the researcher to analyse the data based on the interests of the study. The theoretical framework for the thesis (Figure 9) helped shape they key areas of focus for this study, including stress (both work-related and stress that occurred at home), coping styles and resources in addition to sickness absence This approach has five phases, including familiarisation, initial coding, theme development, reviewing themes, defining and naming themes (Figure 15). .

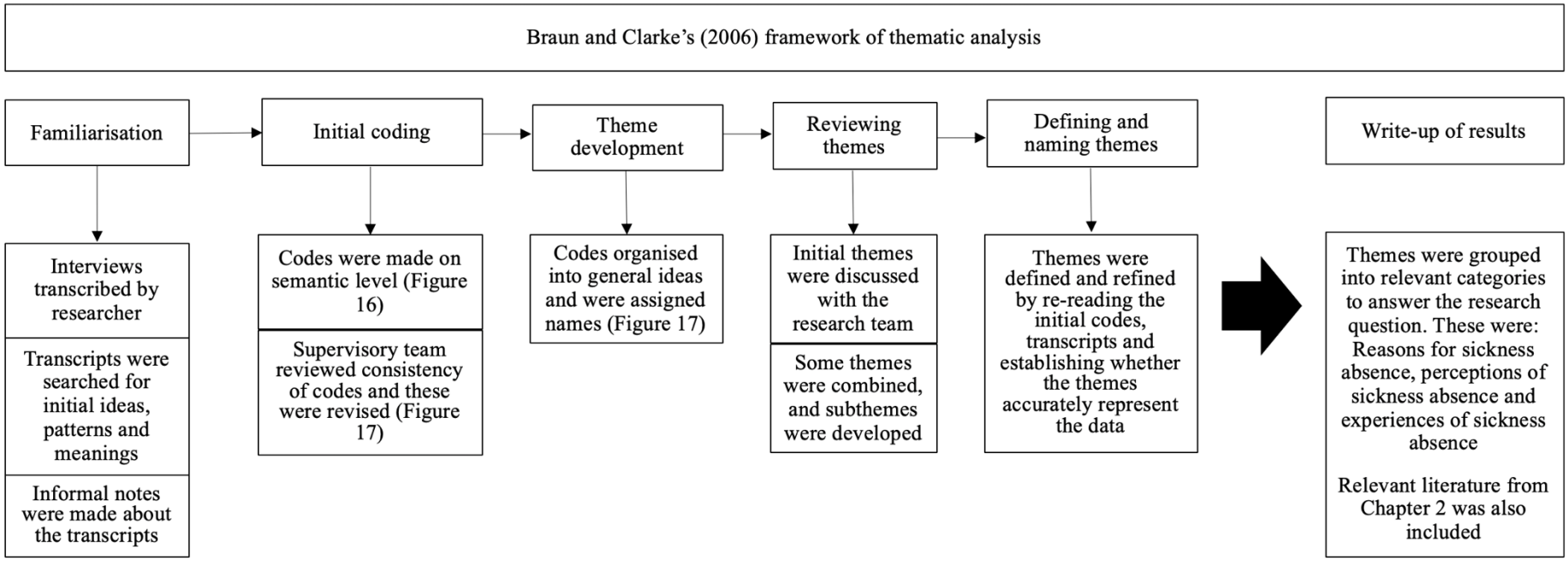


Figure 15. A diagram outlining the process of thematic analysis in the qualitative phase

To ensure the familiarisation of the data, the researcher transcribed the interviews and engaged in the repeated reading of the transcripts. The transcripts were searched for initial ideas, meanings and patterns and notes were produced based on these observations. The researcher also re-read through initial notes made on interview schedules during the interview (Crabtree & Miller, 1999).

Once familiarisation of the data was met, the researcher grouped the data through the generation of initial codes (Tuckett, 2005). Transcripts were coded using NVivo 11 (QSR International, 2018). Codes were made on a semantic level, based on what the participant had said, rather than the researcher's interpretation of the data (Figure 16). Initial codes were shared with the supervisory team, who provided feedback on the quality and consistency of the codes (Cutcliffe & McKenna, 1999).

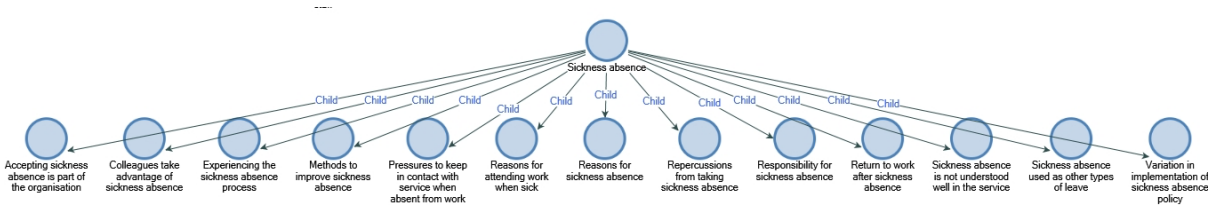


Figure 16. Initial codes for sickness absence

After the initial coding of the data, themes were developed based on the analysis of codes. To do this, the codes were arranged into general ideas and were assigned names that captured the essence of the codes. At this stage, the themes were divided into initial main themes and sub-themes (Figure 17).

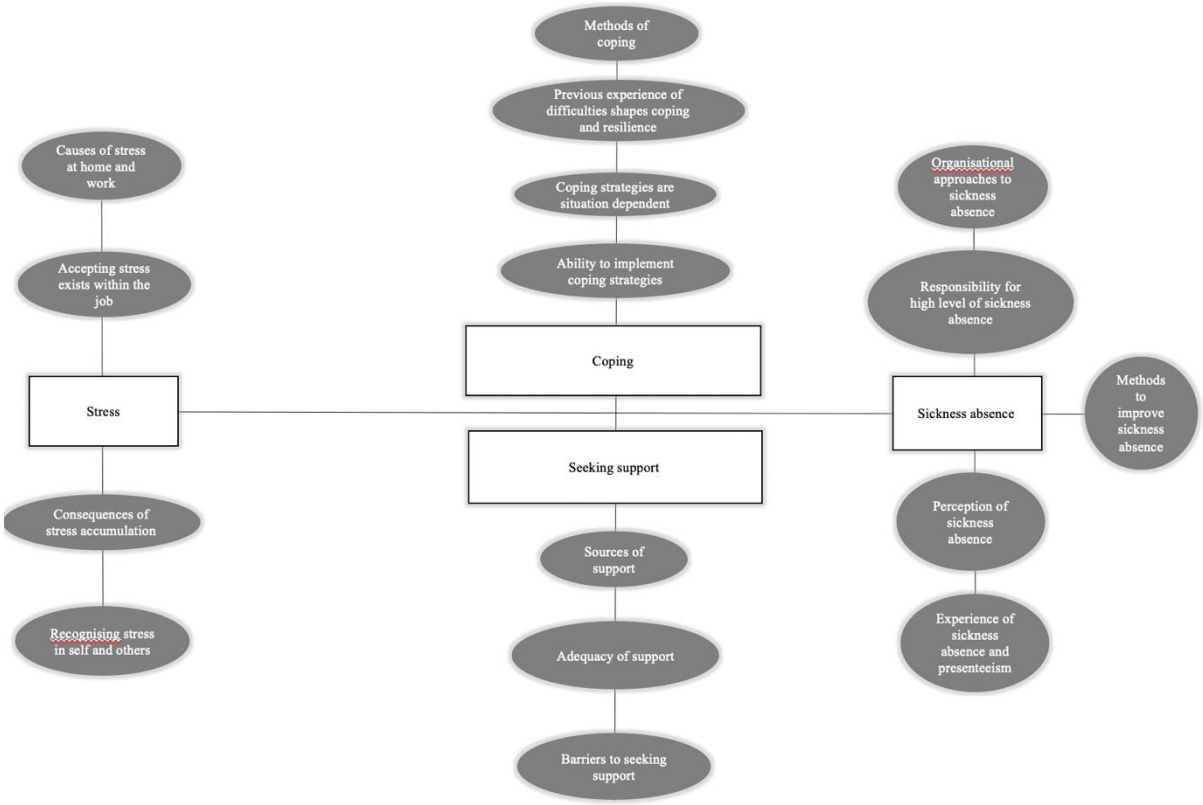


Figure 17. A diagram outlining the initial themes and sub-themes

Themes were reviewed on two occasions with the research team, where initial themes were presented and discussed. Whilst reviewing themes, a process of refining and combining themes and subthemes occurred, particularly if there was a lack of data to support the theme (Patton, 2002). Data were reviewed at the code level, ensuring extracts were synonymous with the theme. An initial thematic map was created (Figure 18), which presented the first visual view of themes. Using this map, themes were refined by re-reading the data set and establishing whether the themes accurately represented the data.

After themes were reviewed and agreement of the thematic map had been met amongst the research team, the themes were defined by capturing the essence of each theme. The final phase of this process then involved a detailed analysis of the theme related to the research question. Chapter 6 provides descriptions of the final themes and thematic map.

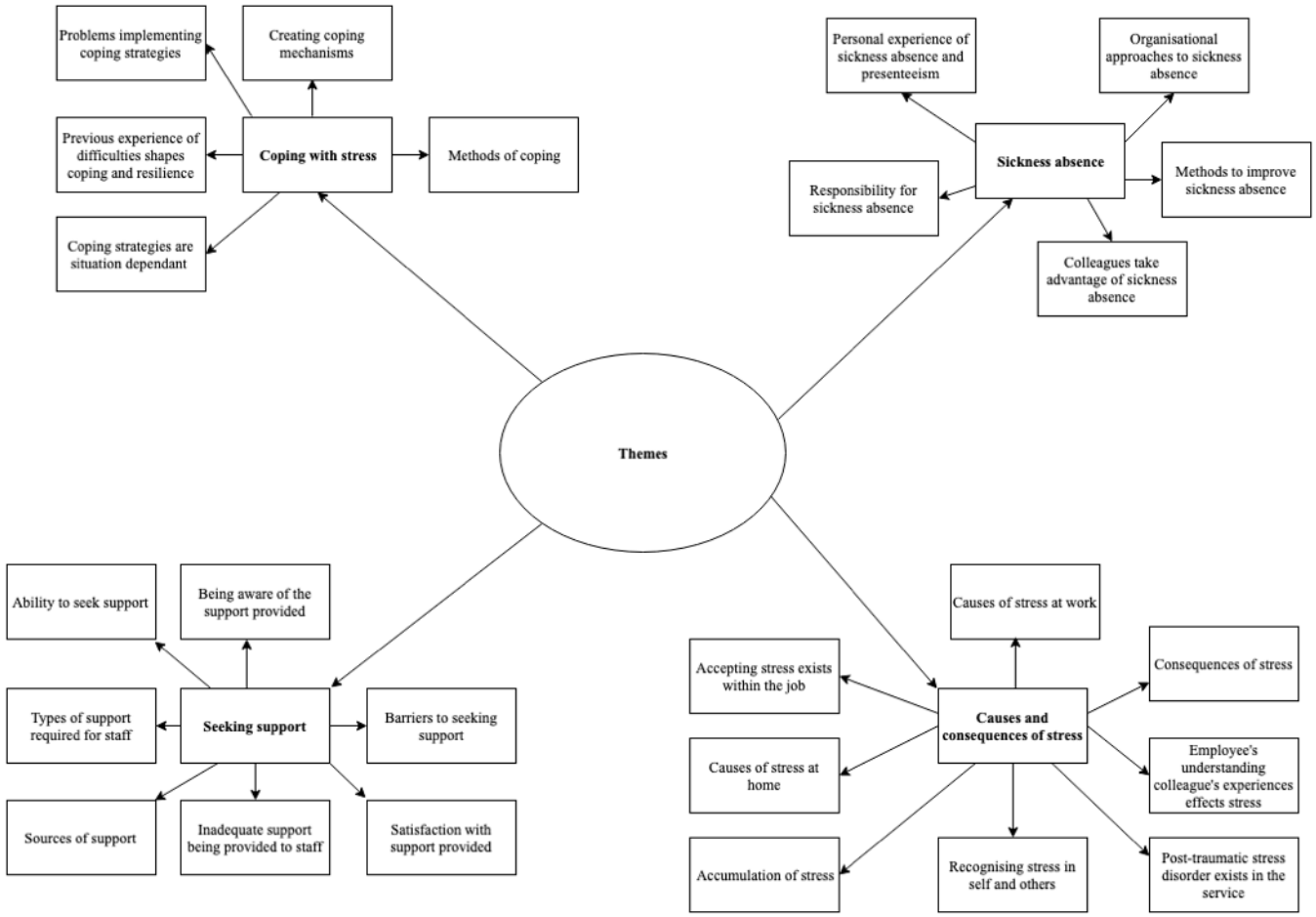


Figure 18. Revised thematic map of codes and initial themes after themes were reviewed and renamed

5.3 Summary

This chapter has presented an overview of the general methods employed in both the quantitative and qualitative phases of this explanatory, sequential mixed methods study. The quantitative phase utilised an independent measures, retrospective, cross-sectional research design to investigate the association between work-related stress, coping styles and sickness absence. Questionnaires were administered to members of the ambulance service and data were analysed using negative binomial regression. The qualitative phase utilised participant responses from the quantitative phase to recruit participants using a participant selection model (Ivankova et al., 2006) through maximum variation sampling. Semi-structured interviews were undertaken with participants and data analysed using thematic analysis. Chapter 6 will present an overview of the findings from the quantitative and qualitative research phases.

Chapter 6 Results

The aim of this explanatory sequential mixed methods study was to investigate the extent to which stress and coping styles are associated with sickness absence (quantitative phase) in addition to exploring employees' reasons, perceptions and experiences of sickness absence (qualitative phase)

This chapter presents the results of the quantitative and qualitative phases of the research.

6.1 Quantitative phase: Investigating the association between stress, coping and sickness absence

The quantitative phase aimed to answer the following research question: To what extent are stress and/or coping styles associated with sickness absence? Based on the current literature, the study hypothesised that:

- Hypothesis 1 (H_1): Ambulance employees with higher levels of work stress (workload, perceived control, responsibility and low social support) will report a greater number of shifts absent across six months
- Hypothesis 2 (H_1): Ambulance employees with avoidant coping styles will report a greater number of shifts absent across six months

6.1.1 Participants

Approximately 4,746 employees were reached through a variety of recruitment methods. A total of 132 participants took part in the online questionnaire providing a response rate of 2.78%. 31 participants were excluded because they did not complete all sections of the online questionnaire or did not meet the inclusion criteria.

Table 6 provides an overview of the demographic characteristics of participants and Table 10 provides information on participants' descriptive statistics. The final sample included a total of 101 participants (51 males, 32 females and 18 preferred not to disclose) aged 24 - 62 years (M = 45.29, SD = 9.97). Participants consisted of Paramedics (n = 42), Emergency Medical (Ambulance) Technicians (n = 16), Emergency Care Assistants and Practitioners (n = 10), Dispatch Officers (n = 9), Clinical Support Management (n = 7), Operations Management (n = 4), Clinical Advisors (n = 4), Team Leaders (n = 3), Clinical Development and Education employees (n = 3) and prefer not to disclose (n = 3).

Time spent employed in the ambulance service ranged from less than one month to 37.5 years (M = 13.85, SD = 9.67). Participant's average number of overtime hours per week ranged from

0 - 48 hours (*M* = 5.88, *SD* = 8.89). Participants worked a number of shift patterns including day to night (*n* = 34), day to evening to night (*n* = 7), night to day (*n* = 3), night to evening to day (*n* = 1), no set pattern (*n* = 25), other shift patterns (*n* = 23) and not applicable (*n* = 8).

Table 7 provides an overview of the job roles within the sample and their average number of shifts absent from work.

Table 6. Participant demographics of sample

	n	%

Sex	Male	51	50.50
	Female	32	31.68
	Prefer not to disclose	18	17.82
Age	20-29	8	7.92
	30-39	16	15.84
	40-49	24	23.76
	50-59	21	20.79
	60-69	5	4.95
	Prefer not to disclose	27	26.73
Job role	Paramedic	42	41.58
	Ambulance Technician	16	15.84
	Emergency Care Assistant / Practitioner	10	9.90
	Dispatch Officer	9	8.91
	Clinical Support Management	7	6.93
	Operations Management	4	3.96
	Clinical Advisor	4	3.96
	Team Leader	3	2.97
	Clinical Development and Education	3	2.97
	Prefer not to disclose	3	2.97
Shift pattern	Day to night	34	33.66
	No set pattern	25	24.75
	Other pattern	23	22.77
	Not applicable	8	7.92
	Day to evening to night	7	6.93
	Night to day	3	2.97
	Night to evening to day	1	0.99
Health conditions	Yes	70	69.30
	No	31	30.69
	Emotional problems	44	43.56

	Back problems	33	32.67
	Insomnia	20	19.80
	High blood pressure	10	9.90
	Asthma	10	9.90
	Kidney or bladder problems	9	8.91
	Arthritis	8	7.92
	Gastritis	8	7.92
	Lung or breathing problems	7	6.93
	Heart disease	5	4.95
	Hernia or rupture	4	3.96
	Cancer	3	2.97
	Diabetes	3	2.97
	Anaemia	3	2.97
	Gall bladder, liver or pancreas	2	1.98
	Colitis	2	1.98
	Epilepsy	1	0.99
	Stomach ulcer	1	0.99

Participants' number of shifts absent from work in the last six months ranged from 0 to 100 shifts (M = 8.27, SD = 14.98) with sickness absence rates ranging from 0 to 83.3% (M = 8.91, SD = 14.99). Eight participants reported to be absent whilst taking part in the study, with stress (n = 3), injury (n = 2), a mental health condition (n = 1) and a cardiac condition (n = 1), with one participant not disclosing a reason for their current absence.

Table 7. Job roles within the sample and their average number of shifts absent from work in six months

Job role	*M*	*SD*
Paramedic	6.05	9.22
Ambulance Technician	3.18	7.67
Emergency Care Assistant / Practitioner	4.00	6.44
Dispatch Officer	18.00	32.67
Clinical Support Management	12.71	16.60
Operations Management	25.00	50.00
Clinical Advisor	5.00	10.00
Team Leader	21.67	14.43
Clinical Development and Education	12.00	15.87
Prefer not to disclose	17.33	17.50

On average, participants reported some/a lot of workload stress (*M* = 3.87, *SD* = 0.67), a little perceived control (*M* = 2.18, *SD* = 0.71), some responsibility stress (*M* = 3.16, *SD* = 1.04) and a little social support (*M* = 3.65, *SD* = 0.64). Five coping styles were reported amongst participants, including rational (*n* = 55), emotional (*n* = 28), mixed coping (*n* = 9), detached (*n* = 5) and avoidant (*n* = 4). Participants with mixed coping styles reported having both rational and emotional (*n* = 4), rational and detached (*n* = 2) and emotional and avoidant coping styles (*n* = 3). Frequency of daily hassles ranged from 32 to 36 (*M* = 35.82, *SD* = .53) with the severity of hassles ranging from 38 to 195 (*M* = 86.84, *SD* = 31.95).

Despite the small response rate, the range of participants recruited in this study were determined to be a close representation of the ambulance service of interest. Table 8 provides an overview of the age ranges in the current study and the ambulance service. Table 9 provides an overview of the sex of participants in the current study and within the ambulance population. Table 8 and Table 9 both provide a percentage difference, showing how different the current sample is to the ambulance population. The major differences in sampling are with regards to ages ranging from 20 – 29 and an underrepresented sample of females. However, it is important to note that both measures had several cases of data where participants did not disclose information, leading to a potential misrepresentation of the participant sample within this study.

Table 8. Age data from the current study compared to one ambulance population in the UK

Age	Ambulance population	Study population[a]	% difference
20-29	20.30%	7.92%	12.38%
30-39	20.80%	15.80%	5.00%
40-49	28.40%	23.80%	4.60%
50-59	23.20%	20.80%	2.40%
60-69	7.10%	5.00%	2.10%

[a] 26.73% of participants did not disclose their age in the current sample.

Table 9. Data on sex of participants from the current study compared to one ambulance population in the UK

Sex	Ambulance population	Study population[a]	% difference
Male	52.30%	50.40%	1.90%
Female	47.70%	31.70%	16.00%

[a] 17.82% of participants did not disclose their sex in the current sample

Table 10. Descriptive statistics of participants

	M	*SD*

Sickness absence	Number of shifts absent in six months	8.27	14.98
	Sickness absence rate	8.91	14.99
Job stress	Workload	3.87	0.67
	Perceived control	2.18	0.71
	Responsibility	3.16	1.04
	Social support	3.65	0.64
Daily hassles	Frequency	35.82	0.53
	Severity	86.54	31.95

Compared to the most recent data from NHS Digital, the sickness absence rate for the current study is 3.53% above the national ambulance service average of 5.38% calculated in 2019. The breakdown of sickness absence data across job roles within the study cannot be discussed due to the nature of data provided by NHS Digital.

6.1.2 Analysis of health conditions

Data were also gathered on participants' diagnosed health conditions[13] and reasons for absence. The most common diagnosed health conditions were emotional problems (n = 44), back problems (n = 33), insomnia (n = 20), high blood pressure (n = 10) and asthma (n = 10). The most common reasons for absence included emotional problems (n = 35), stress (n = 34), gastrointestinal (n = 29), back problems (n = 23), respiratory illness (n = 33), injury (n = 9) and heart problems (n = 6).

Table 11 provides an overview of the proportion of participants who were absent due to their diagnosed health condition. For example, 80% of participants who were diagnosed with heart disease had an absence due to heart and cardiac problems, compared to 2% being absent due to heart and cardiac problems despite not being diagnosed with heart disease. For participants diagnosed with emotional problems, 57% were absent due to emotional problems compared to 30% who were absent with no diagnosis. Moreover, 10% of participants who were diagnosed

[13] It is important to note that some participants were diagnosed with multiple health conditions

with asthma were absent due to asthma, while no participants without a diagnosis of asthma were absent due to this condition.

Table 11. Percentage comparison of participants absent due to diagnosed health conditions

Health condition	Reason for absence	% of participants diagnosed with health condition	% of participants not diagnosed with health condition
Heart disease	Cardiac problems	80%	2%
Cancer	Cancer	67%	1%
Emotional problems	Emotional problems	57%	30%
Lung or breathing problems	Chest/respiratory problems	29%	12%
Asthma	Asthma	10%	0%
	Chest/respiratory problems	30%	11%
High blood pressure	Blood pressure	0%	0%
Stomach	Gastrointestinal	0%	29%

6.1.3 Assumptions of negative binomial regression

In order to complete a negative binomial regression analysis there are a number of assumptions about the data that need to be met. These include independence of observations, testing for outliers and assessment of residuals (Yang & Berdine, 2015).

6.1.3.1 Independence of observations

Independence of observations refers to the relationship between observations or participants in the study (Newton & Rudestam, 2019). In other words, the independence of observation is violated when one observation influences another (McDonald, 2014). Salkind (2019) states that determining whether this assumption is violated can be difficult because there are no statistical tests to measure its presence. Violation of independence of observations can lead to an increase risk of Type I error, that is rejecting the true null hypothesis. Osborne (2015) also notes that on some level, participants may be associated due to being selected from the same organisation. For example, as this study focused on employees in the one UK ambulance service, participants are related on some level due to working for the same ambulance service. However, participants were recruited from a large geographical location with a wide range of backgrounds, job roles, age and sex, suggesting that the independence of observations is met within this study.

6.1.3.2 Testing for outliers

Outliers are typically described as influential data points that can affect data analysis (Gress et al., 2018). Within regression analysis these can be identified through dependent variables or predictors (independent variables) through leverage points (Best & Wolf, 2019).

There are a number of methods used to detect outliers in data, with the most common being the boxplot (Parke, 2015). Within regression, the standardised Pearson residuals can be used to detect values over two, which constitute as outliers (e.g. Midi & Affrin, 2013). Both of these methods were used to detect for outliers in the data and yielded the same response. A total of eight outliers were identified in the data set (Appendix O).

It is common practice in research to consider removing outliers in the data, however, Gumedze and Chatora (2014) suggest that deleting these observations can lead to inaccurate interpretations of regression analyses. Instead, an effective approach to outliers is to consider why particular cases are influential (Bollen & Jackman, 1985). Within the current study, the outliers present in the dependent variable reflect the cases where individuals have had the

majority of the six-month time period off sick. In this case, the outliers do not reflect inaccurate data entry but the reality of sickness absence. Despite identifying eight outliers in the data set using the box-plot method, the outliers were included in the analysis.

6.1.3.3 Assessment of residuals

Residuals are defined as the variation between the observed dependent variable and the independent (predictor) variables (Bernstein & Rowe, 2001). Assessment of residuals can be used to assess linearity, normality and homoscedasticity (Ernst & Albers, 2017).

To assess residuals a scatter plots is created where standardized residuals are plotted against the predicted mean of the response (Hickey et al., 2018). Often this approach is used within other types of regression analyses such as linear and multiple regression. However, count data, often violates the assumptions of normality and homoscedasticity, which is why negative binomial regression is used because it is robust against these assumptions (Lewis-Beck et al., 2014). Guidelines by Heidel (2019) suggest that the assessment of residuals in negative binomial regression is still required. Heidel suggests that if the scatter plot of standardized residuals against the predicted mean of the response displays no significant values from zero, and 95% of the residuals are below 2.0, model fit can be assumed. The scatter plot produced (Appendix P) shows four data point from zero, which could reflect the outliers that were kept in the analysis. However, overall the plot also shows that 95% of residuals are below 2.0 and it can be suggested that model fit is assumed.

6.1.4 Model 1: The association between sickness absence and work-related stress

A negative binomial regression was run to establish the association between number of shifts absent and work-related stress, which consisted of workload, perceived control, responsibility and social support. After adjusting for age, sex, job role, shift pattern, coping styles, time in service, overtime hours and daily hassles, the model was assessed for goodness of fit. According to Heidel (2019), model fit is assumed if the Pearson's chi-squared is above the significance level of .05. The results demonstrate the model has good model fit with a Pearson Chi-Squared value of 1.39. Furthermore, the model is statistically significant, $p < .001$.

The model suggests that for one unit decrease in social support, participants were 2.64 times more likely to have a shift absent [95% CI, 1.38, 5.05], which was statistically significant, $p = .003$. The model found that workload, perceived control and responsibility were not associated with sickness absence.

Further results suggest that compared to participants aged 40-49, participants aged 30-39 were 0.24 times more likely to have a shift absent [95% CI, .08, .70], which was statistically significant, p = .009. Moreover, compared to paramedics, Emergency Care Practitioners and Assistants were 0.27 more likely to have a shift absent [95% CI, .09, .79], Which was statistically significant, p = 0.17.

6.1.5 Model 2: The association between sickness absence and coping styles

A negative binomial regression was run to establish the association between the number of shifts absent and coping styles. After adjusting for age, sex, job role, shift pattern and time in service, the model was assessed for goodness of fit. The results demonstrate the model has good model fit with a value of 1.97. Furthermore, the model is statistically significant, p < .001.

The model found that participants with avoidance coping styles were 4.83 [95% CI, 1.16, 20.14] times more likely to have a shift absent compared to those with rational coping styles, which was statistically significant, p =.031. Participants with a mixture of coping styles were also 3.53 [95% CI, 1.29, 9.69] times more likely to have a shift absent compared to those with only rational coping styles, which was statistically significant, p = .014.

Table 12 . Negative binomial regression models with adjustment variables

		Univariate Model		Model 1 Exposure: Workload, perceived control, responsibility and social support		Model 2: Exposure: Coping styles	
	Variable	Exp(B), 95% CI	*p*	Exp(B), 95% CI	*p*	Exp(B), 95% CI	*p*
Age	Age 1 (Preferred not to disclose)	.65, 95% CI [.36, 1.13]	.147	.16, 95% CI [.05, .48]	.001	.34, 95% CI [.00, .18]	.033
	Age 2 (20-29)	.60, 95% CI [.25, 1.41]	.239	.78, 95% CI [.20, 3.08]	.721	.83, 95% CI [.23, 3.06]	.778
	Age 3 (30-39)	.73, 95% CI [.37, 1.42]	.350	.24, 95% CI [.08, .70]	.009	.42, 95% CI [.15, 1.16]	.093
	Age 4 (40-49)	Reference category					

	Age 5 (50-59)	.95, 95% CI [.52, 1.76]	.877	.53, 95% CI [.23, 1.23]	.140	.47, 95% CI [.21, 1.08]	.077
	Age 6 (60-69)	.27, 95% CI [.09, .84]	.024	.23, 95% CI [.05, .98]	.047	.10, 95% CI [.25, .38]	.001
Gender	Male	Reference category					
	Female	.92, 95% CI [.57, 1.46]	.712	.54, 95% CI [.23, 1.28]	.160	.82, 95% CI [.36, 1.91]	.652
	Preferred not to disclose	.95, 95% CI [.54, 1.69]	.871	3.27, 95% CI [1.07, 9.99]	.038	2.36, 95% CI [.82, 1.91]	.111
Job role	Paramedic	Reference category					
	Ambulance Technician	.72, 95% CI [.40, 1.30]	.272	.77, 95% CI [.32, 1.83]	.549	1.34, 95% CI [.56, 3.25]	.514
	Emergency Care Practitioner/Assistant	.297, 95% CI [.14, .64]	.002	.27, 95% CI [.09, .79]	.017	.40, 95% CI [.13, 1.20]	.102

	Team Leader*	0	.	0	.	0	.
	Clinical Advisors	.170, 95% CI [.05, .59]	.005	.04, 95% CI [.01, 1.97]	.000	.05, 95% CI [.01, .22]	.000
	Clinical Support Management	.515, 95% CI [.22, 1.20]	.126	.39, 95% CI [.06, 2.41]	.308	.21, 95% CI [.04, 1.14]	.071
	Operations Management	.742, 95% CI [.25, 2.17]	.586	4.08, 95% CI [.76, 21.81]	.101	2.13, 95% CI [.40, 11.41]	.377
	Dispatch Officer*	0	.	0	.	0	.
	Clinical Development and Education	0	.	0	.	0	.
	Prefer not to disclose*	.353, 95% CI [.09, 1.33]	.124	0	.	0	.
Shift pattern	Day to evening to night	.652, 95% CI [.28, 1.52]	.320	1.02, 95% CI [.28, 3.67]	.983	1	.866

	Night to evening to day*	1.30, 95% CI [.16, 10.34]	.804	0	.	0	.
	Day to night	Reference category					
	Night to day	.069, 95% CI [.01, .42]	.004	.38, 95% CI [.04, 3.68]	.407	.08, 95% CI [.01, .58]	.013
	No set pattern	.824, 95% CI [.50, 1.40]	.444	1.37, 95% CI [.59, 3.19]	.468	1.54, 95% CI [.66, 3.61]	.323
	Not applicable	.088, 95% CI [.03, .25]	.000	.35, 95% CI [.070, 1.88]	.222	.33, 95% CI [.07, 1.65]	.178
Coping styles	Rational	Reference category					
	Detached	1.36, 95% CI [.51, 3.59]	.539	3.70, 95% CI [.43, 31.85]	.233	2.73, 95% CI [.36, 20.49]	.329
	Emotional	1.73, 95% CI [1.06, 2.80]	.027	2.42, 95% CI [1.26, 4.66]	.008	1.89, 95% CI [.10, 3.58]	.051

	Avoidance	3.87, 95% CI [1.37, 10.97]	.011	6.22, 95% CI [1.52, 25.49]	.011	4.83, 95% CI [1.16, 20.14]	.031
	Mixed	2.20, 95% CI [1.06, 4.60]	.035	9.12, 95% CI [2.99, 27.79]	.000	3.53, 95% CI [1.29, 9.69]	.014
Time spent in service		1.02, 95% CI [.10, 1.05]	.063	1.01, 95% CI [.95, 1.07]	.803	1.05, 95% CI [.99, 1.11]	.091
Overtime hours		.94, 95% CI [.91, .97]	.000	.93, 95% CI [.89, .99]	.015	**	**
Daily hassles (severity)		.101, 95% CI [1.01, 1.02]	.000	1.03, 95% CI [1.02, 1.04]	.000	**	**
Workload		1.45, 95% CI 1.02, 2.07]	.040	.92, 95% CI [.57, 1.49]	.742	1.50, 95% CI [.96, 2.33]	.074
Responsibility		1.10, 95% CI [.89, 1.35]	.390	1.14, 95% CI [.85, 1.54]	.387	1.02, 95% CI [.74, 1.40]	.905
Perceived control		.51, 95% CI [.34, .77]	.001	.53, 95% CI [.28, 1.02]	.058	.53, 95% CI [.28, 1.02]	.056

Social support	.90, 95% CI [.61, 1.32]	.576	2.64, 95% CI [1.38, 5.05]	.003	1.37, 95% CI [.74, 2.53]	.321

*Confidence interval [95% CI] cannot be calculated
**Not required in model for adjustment

6.2 Qualitative phase: Exploring employees' experiences, perceptions and reasons for sickness absence

The qualitative phase aimed to answer the following research questions:

- What are employees' reasons, perceptions and experiences of sickness absence?
- What do ambulance staff perceive should be included in an intervention to target sickness absence?

6.2.1 Participants

A total of 80 (79%) of participants who took part in the quantitative phase consented to being contacted for a semi-structured interview. A total of 45 participants were invited to take part in a semi-structured interview to take place via telephone or face-to-face at the University of Lincoln. A total of 12 participants took part in the interviews with eight being conducted via telephone and four being conducted face-to-face.

The sample included male (n = 9) and female (n = 3) employees who currently worked in clinical/operational (n = 11) or management (n = 1) roles in the ambulance service. Despite this classification, some participants (n = 3) had previously been employed in a management role but were currently serving in a clinical/operational capacity. Table 13 provides an overview of the demographic characteristics of each participant.

The duration of interviews varied between 39 minutes and two hours 25 minutes with interviews lasting on average one hour 39 minutes.

Table 13. Demographic characteristics of participants included in the qualitative phase

Identifier	Age	Sex	Job role	No. shifts absent	Work-related stress				Coping style
					Control	Workload	Social Support	Responsibility	
1	55	Male	Clinical/Operational	0	High	High	High	Low	Rational and Detached
4	49	Male	Clinical/Operational	3	High	High	High	Low	Rational and Emotional
5	54	Male	Clinical/Operational[14]	4	Low	High	High	High	Rational
19	35	Female	Clinical/Operational	40	Low	High	High	Low	Rational
29	55	Male	Clinical/Operational	0	Low	High	Low	High	Detached
30	46	Male	Clinical/Operational	30	High	High	Low	Low	Rational

[14] Participants had previous management experience but were currently employed in a clinical/operation role

34	53	Male	Clinical/Operational[14]	0	High	Low	High	High	Rational and Detached
42	48	Male	Management	0	High	High	Low	High	Rational and Detached
46	46	Male	Clinical/Operational	1	High	Low	Low	Low	Rational and Emotional
47	60	Male	Clinical/Operational[14]	0	Low	High	High	Low	Rational
49	49	Female	Clinical/Operational	5	Low	High	High	High	Rational
50	42	Female	Clinical/Operational	0	Low	High	High	Low	Detached

6.2.2 Results

Following thematic analysis of participant interviews, eight themes were captured relating to the experiences, perceptions and reasons for sickness absence amongst ambulance employees (Figure 19). These themes have been grouped with main themes highlighted in blue and sub-themes highlighted in yellow. For several sub-themes, participants spoke about ‘ideas’, which are presented in green. This section will present a narrative discussion of the themes and subthemes whilst presenting verbatim quotations from participants.

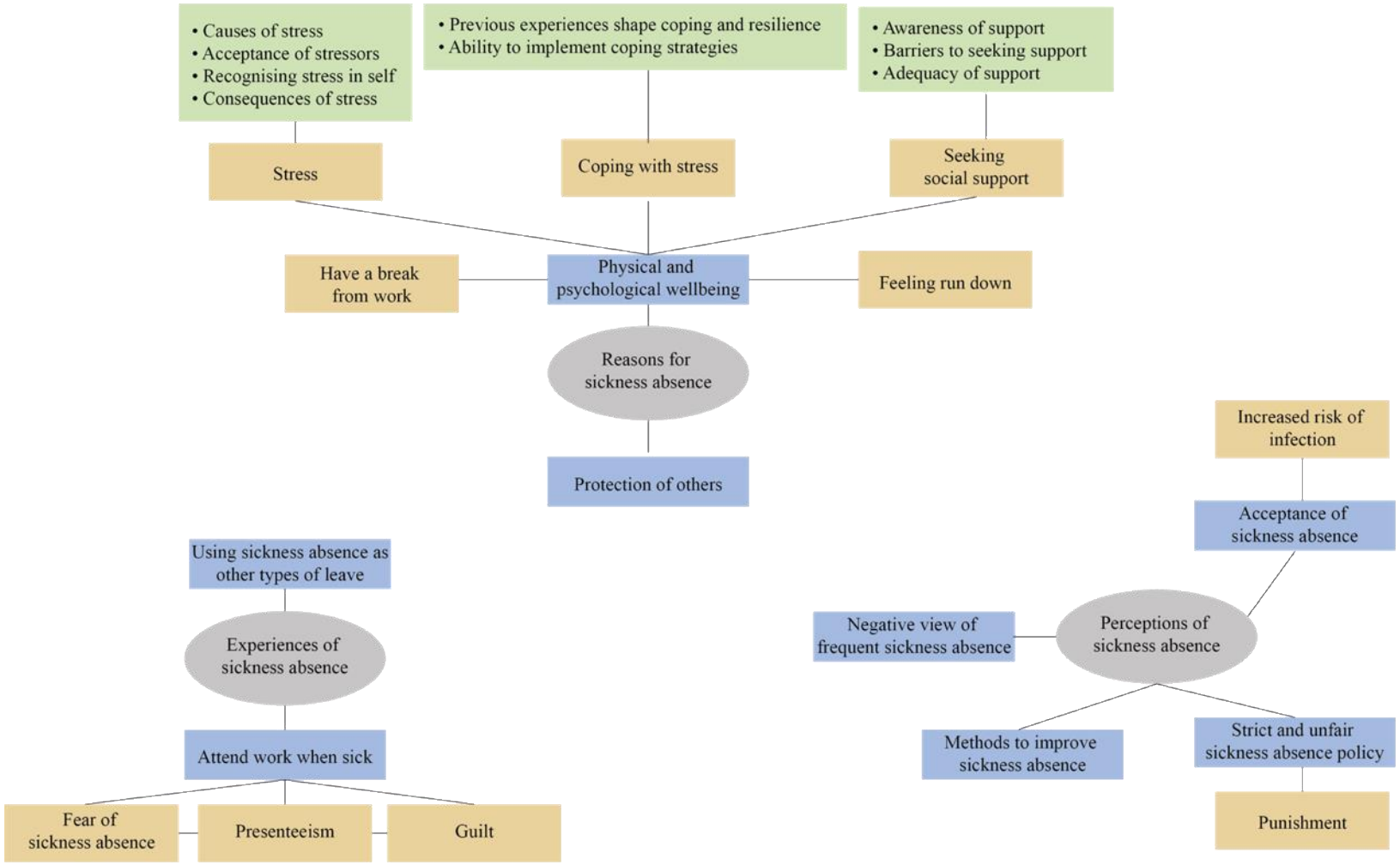


Figure 19. Thematic map of themes and subthemes

6.2.3 Reasons for sickness absence

Participants discussed several reasons for sickness absence, which consisted of two main themes: physical and psychological wellbeing and the protection of others.

‘Physical and psychological wellbeing' refers to the idea that being either physically or psychologically unwell can lead to participants engaging in sickness absence. Physical wellbeing refers to a disease that may be present, which manifests itself through signs and symptoms in the body (e.g. Mechanic, 1986). Psychological wellbeing refers to an individual's mental health and mental illness. This theme is further split into the subthemes of ‘stress', ‘coping with stress', ‘social support', ‘have a break from work' and ‘feeling run down'.

The subtheme of ‘stress’ reflects the stressors that individuals experience in their work and home environment. Participants noted several, distinct stressors that occurred at home and work and described these negatively. The sub-theme ‘acceptance of stressors' refers to the participants’ beliefs that stress is a part of their job role. 'Recognising stress in self' refers to physical and behavioural symptoms that participants use to establish whether they are experiencing or have experienced stress. The idea of consequences of stress relates to problems that may occur if an individual does not implement effective or appropriate coping strategies. This theme focuses on the consequences of stress when it accumulates over time.

The subtheme ‘coping with stress’ concerns the range of different coping strategies that participants engage in, which are closely linked to coping styles such as avoidant and emotion-focused coping. It reflects the notion that previous experience of difficulties shapes coping and resilience, which refers to the influence of participants’ earlier experiences on the implementation of coping strategies. Within this theme, there is a divide between the perceptions of coping between experienced and newly qualified ambulance staff. Moreover, the ability to implement coping strategies concerns participants’ abilities to implement coping in their day to day lives, both at work and at home. One example of a coping strategy is ‘have a break from work’, which relates to the need to rest after engaging in intense work activities, which could include a traumatic job or a stressful shift.

‘Seeking social support’ captures an example of a coping strategy that participants discussed. The idea of ‘awareness of support” relates to the professional sources of support staff are offered and whether participants have an awareness of these. Moreover, the idea of ‘barriers to seeking support’ refers to factors that prevent participants from seeking formal or informal sources of support. Adequacy of support is considered one of the barriers to seeking social support. It refers to whether participants perceive social support as adequate or inadequate.

The sub-theme ‘feeling run down' captures an example of how a participant's physical health is affected at work. 'Feeling run down' captures tiredness and exhaustion, which may also manifest itself through other physical symptoms.

Participants also reported using sickness absence as a way to protect other individuals. The theme ‘protection of others’ relates to engaging in sickness absence to prevent the spread of infection from an individual to other colleagues or patients.

6.2.3.1 Physical and psychological wellbeing

When discussing current or previous reasons for engaging in sickness absence, participants reported that their sickness absence spells were as a result of "anxiety, stress and depression" (P4, Male, Clinical/Operational, 3 shifts absent). Similarly, stressful circumstances that occur at work also drive others to engage in sickness absence with one participant reporting that "I went off sick at work I just had a big row with a manager… I just walked out been totally stressed out…it got too much" (P47, Male, Clinical/Operational, 0 shifts absent). These extracts demonstrate that engaging in sickness absence can be attributed to mental health and illness, particularly when a stressful event has occurred in the workplace. Such comments also suggest that individuals perceive specific stressors as 'too much' and as a result, cannot cope with them, and the individual engages in sickness absence.

‘Stress’ captures several, negative stressors that are present in both the workplace and the home environment. Participants reported work-related stressors such as a feeling of constantly being on the go, responding to non-emergency calls, public expectations of the ambulance service and relationships with management. Similarly, participants discussed several home-related stressors such as finance, family illness and a lack of time to complete tasks.

Constantly on the go captures the feeling of a continuous and nonstop ambulance service, which served as a source of stress for participants. This stems from the constant stream of calls that staff are required to answer and attend. For example, one participant commented that "there is always a job waiting for you" (P29, Male, Clinical/Operational, 0 shifts absent), which suggests that there is no break in the workload. Similarly, another participant reported that "it never stops you pick your vehicle up and you pretty much go from call to call” (P4, Male, Clinical/Operational, 3 shifts absent), indicating that staff are continuously responding to patients until the end of their shift.

A consequence of being constantly on the go means that staff are not able to obtain a break between responding to calls. For one participant, this meant that they were not able to process the jobs that they attend and likened this experience to a filing cabinet.

> I'd likened it to a filing cabinet your brains a filing cabinet and the files are jobs you're going to and normally you'd go to a job and then if you've got time you deal with it in your head and pop it in your filing cabinet but basically what's happened recently with it being so busy and people chasing you up for calls is that is you don't get that time to deal with it so all of those files whirl around in your head are not getting filed away then what I was finding was that jobs I've done previously because the filing cabinet so to speak was open and waiting for these files to go in jobs I've been to previously which I thought I'd sort of sorted out in my head were starting to pop up and come out again and I was having problems sleeping (P30, Male, Clinical/Operational, 30 shifts absent)

Being unable to "file away" or process the calls that one has attended because of being constantly on the go seems to have consequences beyond the workplace, such as being unable to sleep. This indicates that being unable to deal with calls has consequences, for example it has the potential to spill over from the working environment, to the home environment (Tuttle et al., 2018). The feeling of "people chasing you up" stems from control sending another job to employees after finishing with a patient which does not allow for employees to process the job that they have just experienced. This indicates that participants may be experiencing a high level of stress due to these job demands.

The feeling of constantly on the go and being chased for calls is not something that the ambulance service has always experienced. When some of these participants first started working for the service "you would be on the ambulance station kind of waiting for a job to come in… you'd sit around drinking tea waiting" (P29, Male, Clinical/Operational, 0 shifts absent). This demonstrates that there was a time in the ambulance service where demand for the service was not as high as it is now. Participants who remember what the service was like when they started may make comparisons between then and now, which may add to the stress experienced.

Participants also reported that responding to non-emergency calls were also a stressor that they experienced. Over the past decade, there has been a shift in the type of calls that the ambulance service attend. Traditionally, the service was responsible for emergency calls related to life-threatening, medical emergencies, however, recently the ambulance service has taken on a

broader role responding to emergencies in addition to urgent care calls (Brydges et al., 2016). The demand for the service is high, but it is evident that the volume of calls may be attributed to general medicine rather than emergency calls, which participants did not like. One participant reported that the ambulance service should not be responding to these urgent medicine calls.

> I think our job is becoming diluted quite a lot with jobs that we shouldn't be going to you know your minor chest infections your minor UTIs [urinary tract infections] that urinary tract infection stuff that really people should be going to the GP for (P1, Male, Clinical/Operational, 0 shifts absent)

Such comments indicate that the ambulance service is being called to attend minor illnesses that do not require an ambulance, which causes stress for ambulance staff. There is a sense that the general public is not accessing the correct resources and instead call an ambulance. There also seems to be a belief that the ambulance job is being inundated with non-emergency calls, which means that the role is 'diluted' and is being modified and watered down by the continual response to non-emergency calls.

When asked why responding to non-emergency calls was a stressor, participants reported that it was due to a discrepancy between these calls and the training they receive. One participant reported that "we're trained in emergency medicine [but] a lot of the things we go to are general medicine calls…sometimes they can be challenging because we have to figure things out" (Participant 30, Male, Clinical/Operational, 30 shifts absent). There is a sense that ambulance calls are no longer about saving an individual's life but instead it is about finding out what is wrong with the patient and choosing the most appropriate medical pathway, which includes making a decision on whether to transport the patient to the hospital. As a result, participants did not feel like they were adequately trained in urgent care to make these judgements.

Alongside this, participants blamed NHS 111 for increasing the number of urgent and non-emergency calls to the ambulance service. NHS 111 is an intermediary service between the patient and medical services that offer medical advice and guidance. It was first introduced to reduce the demand on the ambulance service, but evidence suggests that NHS 111 has increased demand for the ambulance service by 2.9% (Turner et al., 2013).

Participants spoke about their frustrations with NHS 111 due to the "categorisation of calls… they categorise calls as a perceived life-threatening emergency and obviously on seeing the patient it's not what it seems" (P4, Male, Clinical/Operational, 3 shifts absent). Such comments

indicate that participants are frustrated at the misdiagnosis that NHS 111 provides to patients and the ambulance service. Participants also commented on the relationship between the ambulance service and NHS 111 describing it as a "bit of a battle… because their system sends calls through that are totally inappropriate" (P34, Male, Clinical/Operational, 0 shifts absent). This indicates that the NHS 111 service has an inappropriate classification system and may send urgent care calls to the ambulance service if they are unsure about the patient's condition.

The stress and frustration felt by participants towards NHS 111 also link to public expectations of the ambulance service. The public's view of the ambulance service is shaped by several sources such as the media and through personal experiences with the service. Porter et al. (2009) highlighted that members of the public are cautious and are aware of the importance of making appropriate calls to the service whilst perceiving that ambulances respond immediately.

Participants reported similar expectations from the public with one participant commenting that the public expect ambulances "to be sat on the street corner just waiting for their call and they just don't understand" (P34, Male, Clinical/Operational, 0 shifts absent). This extract suggests that in their own experience of responding to calls, the public have an incorrect view of the service and how it operates in practice, leading to stress amongst ambulance staff. A lack of understanding of the ambulance service also feeds into the perception that "the public lack common sense… they're ringing constantly for silly little things day in and day out" (P50, Female, Clinical/Operational, 0 shifts absent). This indicates that the public is actually not aware that they are making inappropriate calls to the service and call the ambulance service when they perceive their situation to be a medical emergency. This may be explained by the patient's interpretation of a medical emergency, which may be influenced by emotions which may influence the call taker's response to the call (Booker et al., 2014). Further to this, the general public may not have the same level of medical knowledge as members of the health service, which could suggest why calls perceived as emergencies are considered “silly little things” by staff in the ambulance service.

In addition to stressors related to the ambulance role of responding to medical emergencies, participants reported an operational stressor related to the relationships between staff and management. One participant reported that the main challenge of their role in the ambulance service is “not working out on the road as much as dealing with management issues” (P47, Male, Clinical/Operational, 0 shifts absent). Such comments indicate that the relationships between employees and management are one of the biggest problems in the ambulance service compared to working on the road and responding to patients.

One participant commented that staff were not able to form relationships with management because “the turnover of management staff is so high that it’s hard for anyone to build proper rapport… so I think when you go out and do your job you’re pretty much working isolated (P19, Female, Clinical/Operational, 40 shifts absent). Such comments indicate a sense of feeling alone at work, suggesting participants are unable to seek support or guidance from management staff because they are unable to build good relationships with management because they are constantly coming and going.

The consequences of being unable to form relationships with management include participants perceiving that management are "messing us around all the time [and they're] taking away from us" (Participant 47, Male, Clinical/Operational, 0 shifts absent). This extract demonstrates that participants feel they are mistreated and undervalued by management leading to a perception that things (such as resources and opportunities) are being taken away from them.

Stressors that participants experience at work are also coupled with stressors at home, also known as daily hassles (Larsson et al., 2016). Some participants reported stressors arising from finance, family illness and a sense of not enough time to get tasks completed.

Participants highlighted that financial struggles existed in their daily lives, which included "finances and struggling to pay bills… that's kind of always over your head same as everybody else" (P46, Male, Clinical/Operational, 1 shift absent). This indicates that finances are a continuous stressor that participants experience that is always with them, that have the potential to affect all individuals. This type of stressor has the potential to spill over into participants’ working lives and affect the stress experienced in the working environment (Tuttle et al., 2018). Moreover, for participants that had high levels of sickness absence, finance may have been more of a concern due to the financial consequences of receiving reduced levels of pay when on sick leave (Clasen, 2017).

In addition to financial stressors, participants reported that family illness was another stressor present in their home environment. For some participants, there were family illnesses that they had to deal with such as "my father [has] not been too well and he's been into hospital a couple of times" (P1, Male, Clinical/Operational, 0 shifts absent). An illness that occurs within the family can increase the level of caring responsibilities at home and lead the individual to experience increased levels of stress (Krantz & Ostergen, 2001).

Family illness and an increase in family responsibility is an example of a stressor that feeds into the perception of having a lack of time to complete tasks. Participants reported that "I'm stressed because I don't have time to do stuff my to do list gets longer and longer (P34, Male,

Clinical/Operational, 0 shifts absent). This example suggests that stress arises from tasks that build-up at home and the inability to find time to complete them. It indicates that participants view the time they have at home to do their own tasks is minimal, and this decreases the ability to perform tasks.

Despite several stressors occurring at home and within the workplace, participants reported an acceptance of stressors, particularly those that occur at work within the ambulance service. One participant commented that "there are plenty of stressors as you are rushing patients in on blue lights and what have you that's got stressors attached with it but again it is what it is" (P46, Male, Clinical/Operational, 1 shift absent). Such comments indicate that ambulance staff will always be faced with stressors in their working environment due to the risk associated with ambulance work, such as travelling on blue lights. Acceptance of stressors takes the form of understanding that these stressors exist, but there is no way of avoiding or removing them from the environment. As a result of participants accepting the stressors within their environment, participants reported that "it's just reducing it [stress] as much as possible so it doesn't get to that stage that you need to go off for stress" (P30, Male, Clinical/Operational). This comment indicates that the extent to which this stress affects an individual can be reduced to prevent staff from engaging in sickness absence.

However, a crucial aspect of being able to determine whether stress is affecting an individual's life is to be able to recognise stress in themselves. If individuals are able to recognise the signs and symptoms of stress, they are then able to take preventative measures to reduce stress and avoid any adverse consequences (Lazarus & Folkman, 1984). Participants reported that they are able to recognise stress in themselves through physical symptoms and through mood changes and the quality of relationships with others.

When an individual is exposed to a stressor, several physiological changes occur in the body that manifests as physical symptoms (e.g. Selye, 1936). Participants reported several physical symptoms of stress, such as headaches, skin conditions and tremors, which are consistent with the activation of the hypothalamic-pituitary-adrenal axis (HPA) and the sympathetic nervous system (SNS) (Joseph & Whirledge, 2017).

One participant reported that after exposure to stressors they "get the shakes afterwards or at the time and you can just feel your heart pounding" (P49, Female, Clinical/Operational, 5 shifts absent). Within the stress response, the HPA and the SNS are responsible for preparing glucose and the body to fight or flee from a stressor (Pasquali, 2012). As a result of these processes, an

individual's heart rate rises, and glucose is produced in the body. This could partly explain why this participant experienced the physical symptom of their "heart-pounding".

Other physical symptoms include skin conditions such as rosacea "if I'm really run down I'll get rosacea on my left cheek" (P19, Female, Clinical/Operational, 40 shifts absent). Skin conditions have been linked to stress exposure and are suggested to be prevented through stress management techniques (Veerkamp et al., 2016). These physical skin conditions suggest that stress has an external physical manifestation rather than internal and may impact the quality of life of an individual.

In addition to physical symptoms, participants also reported being able to recognise stress when it affected their mood and relationships with other individuals. For example, being "very frustrated at the slightest little thing and quite angry at things which isn't like me at all… criticising my wife and moaning at my children" (P30, Male, Clinical/Operational, 30 shifts absent) were reported as characteristics that allowed participants to recognise that they were stressed or were experiencing a stressor. This extract demonstrates the impact that stress may have on relationships within the family. In particular, the family may be used as a way to vent frustrations about stressors in which communication between individuals is affected. There are also some subtle mood changes related to becoming angrier and more critical that this participant is able to identify as "isn't like me at all" indicating that they are able to recognise these changes in themselves.

Being able to recognise these symptoms is useful as participants were able to take action and implement coping strategies. Participants reported being able to "recognise when I'm starting to get that way [stressed] and effectively just think just chill out [and] get on with it" (P5, Male, Clinical/Operational, 4 shifts absent). Such comments suggest that recognising stress in oneself is a beneficial activity in order to move on with their lives and cope with the stressor.

Despite some participants being able to recognise signs of stress in themselves effectively, many participants discussed the negative consequences that stress had on their behaviour and psychological wellbeing. Participants discussed how the accumulation of stress led them to engage in sickness absence.

> "I had to have I think six months off because I'd reached breaking point within the service… I felt [the stress] were on my shoulders and nobody's listening and you're crying for help and you're going to jobs that are upsetting" (P50, Female, Clinical/Operational, 0 shifts absent)

Such comments suggest that stress builds up and accumulates over time until the point that individuals can no longer deal and cope with it, which leads to an individual taking a prolonged period of time off work. Within this, experiencing a lack of support and feeling like you are not being listened to can heighten and increase the stress. This all occurs in addition to the traumatic stress that may occur when attending ambulance jobs, such as fatalities (Avraham et al., 2014).

The staff that are exposed to both traumatic stress and those who have had prolonged stress exposure may be at risk of PTSD. As previously discussed, PTSD is a mental health condition that affects employees in the ambulance service (Dodd, 2017; Petrie et al., 2018). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), PTSD is categorised as the presence of intrusive thoughts, reactions such as flashbacks, avoidance of stressful stimuli, alterations in mood or cognitive impairment with symptoms lasting longer than one month (American Psychiatric Association, 2013).

Participants reported experiencing "a breakdown at work because of the stress of the job [and] I ended up with PTSD (P49, Female, Clinical/Operational, 5 shifts absent). This extract indicates that an accumulation of stress has severe consequences in the form of mental illness. Moreover, the experience of having a breakdown echoes an inability to cope with the stress experienced.

Compared to other occupations, such as the armed forces, PTSD is “two or three times higher within the ambulance service but nothing seems to be done about it (P47, Male, Clinical/Operational, 0 shifts absent). This indicates that PTSD is not effectively dealt with or prevented amongst ambulance employees, suggesting that this consequence of stress could be reduced if appropriate treatment is provided to staff. For example, post-traumatic growth can occur among those who are at risk of PTSD if they have good social support networks, which are able to promote resilience and growth (Armstrong et al., 2014; Oginska-Bulik, 2013).

In addition to an accumulation of stress affecting an individual, stress has consequences for the relationship with patients and increases the likelihood of making mistakes within the job. When staff are exposed to increased levels of stress, it impacts the care that they provide to patients (LeBlanc et al., 2005). In particular, one participant reported seeing colleagues “getting more snappy on jobs because we go to a lot of jobs that are questionable as to whether they require an ambulance…some people do get wound up about it” (P46, Male, Clinical/Operational, 1 shift absent). From this, it could be suggested that this anger may be directed towards the patient if an ambulance is responding to someone who does not need medical assistance.

Alongside anger, participants stated that increased exposure to stress could lead to "too much pressure [and] that's when mistakes are being made" (P34, Male, Clinical/Operational, 0 shifts absent). In particular, mistakes such as inaccurate drug calculations can be made in high-stress situations (LeBlanc et al., 2005) and has the potential to impact patient safety. Participant 34 eludes to 'mistakes being made' suggesting that there is not a potential that stress increases the chances of making a mistake, but stress has made employees make mistakes.

The consequences of stress outlined by participants once again highlight the importance of effectively managing and reducing the impact of stress on an individual. Coping with stress is, therefore, a crucial aspect related to sickness absence as it could have the potential to influence whether an individual engages in sickness absence. In particular, an inability to cope could lead to an individual engaging in sickness absence.

When discussing the specific methods and strategies that participants used to cope with stress, participants reported engaging in hobbies such as "the guitar a bit the keyboards a bit just for my own pleasure… I find that a way of just kind of switching off if you like" (P29, Male, Clinical/Operational, 0 shifts absent). This extract indicates that engaging in enjoyable hobbies allows participants to take their mind off and distract themselves from the stressors that they have encountered. This strategy allows for the participant to cognitively distance themselves from the stressor, which is suggested to be a method of avoidance coping, which is particularly useful in dealing with stressors as they arise (Elklit, 1996).

The use of avoidance coping mechanisms is also seen when participants are at work and do not have the ability to engage in their hobbies. One participant commented that when they are at work, and they are exposed to stressors they "will get away from the situation if I can I'll go make the drinks for everyone just to get me out and away from the situation" (P34, Male, Clinical/Operational, 0 shifts absent). Such comments suggest that regardless of whether they are at home or in the working environment, participants are able to find something to do, which distracts and allows them to avoid exposure to the stressor. However, this is not the most effective method of coping, as Hershcovis et al. (2018) argues that the stressor may still be present after the individual has avoided it.

Participants also report using emotion-focused coping such as "crying a hell of a lot but that's my release mechanism…if I'm crying then I know that I'm dealing with it" (P19, Female, Clinical/Operational, 40 shifts absent). This indicates that the use of crying as a coping strategy provides physical and mental release from the stressor. For this participant, coping using crying also provides a method of identifying when they are stressed and provides a measure of how

well they are coping with it. This extract further demonstrates that coping is a very individual activity, suggesting that some coping strategies may work better for some than others.

When discussing their coping strategies, participants referred to previous experiences of difficulties that shaped their coping and resilience. One participant who had previously worked in the military drew on their experience and how it shaped them in the ambulance service.

> I've been hammered in the military for 20 odd years and 18 hour patrols and all that so you know a couple of miles on the truck [ambulance] is no big deal to me but I think some of the younger ones that are coming in haven't had that exposure (P1, Male, Clinical/Operational, 0 shifts absent)

Such comments indicate that the experience in other organisations, such as the military, helped them to build resilience, which allowed them to cope better with the stressors in the ambulance service. However, younger employees that do not have this type of experience may struggle and perceive long working hours and travelling on the ambulance as a more intense stressor than those who also have experience doing so. This suggests that older individuals and those who have spent longer in the service or related professions have a better understanding of how to overcome these types of stressors and have developed more appropriate coping strategies (Trouillet et al., 2011).

The lack of experience that younger and newly qualified staff has suggested they are not well prepared for a role in the ambulance service. Participants perceive that there are "students out of school wanting to be a paramedic 2 years at university and they're coming out on the road… and academically they're brilliant but they're struggling with the stress of the job" (P47, Male, Clinical/Operational, 0 shifts absent). This has several consequences for newer staff including "the average lifespan for a paramedic before they burnout is 6 years whereas if you've come through working through at grassroots level you tend to build up a tolerance you see more" (P47, Male, Clinical/Operational, 0 shifts absent). This indicates that newly qualified staff lack the experience and exposure to the ambulance service, which means they have not developed appropriate coping strategies to overcome the stressors they may experience. Moreover, working in the ambulance service from a basic level helps build a tolerance for the role because you have more exposure to these events and situations.

This was evident amongst participants who had spent several years working for the ambulance service who describe themselves as "a bit of a cold fish" because "I've worked in the service 13 years my emotions don't exist anymore…I've become a bit hardened to it" (P50, Female,

Clinical/Operational, 0 shifts absent). This indicates that tolerance is built as more time is spent in the service, which impacts the individual's emotional responses to situations. Participants reported that this has a particular effect when responding to medical emergencies "I mean we go to some awful jobs don't get me wrong…I'm quite desensitised I suppose" (P19, Female, Clinical/Operational, 40 shifts absent). This indicates that once tolerance is built up over the years, individuals become desensitised and can deal with anything.

According to participants, gaining experience and building tolerance in the ambulance service is similar to "build[ing] up a certain level of resilience" which occurred "from when it was quieter you know it wasn't quite as busy" (P30, Male, Clinical/Operational, 30 shifts absent). This indicates that resilience is no longer being built within the service due to there being high demand for the service. Furthermore, this may reflect the change in training routes that the ambulance service offer.

Moreover, this also suggests that ambulance staff do build resilience within their role, which may help them when experiencing future challenging situations. This was evidenced by Dooley et al. (2017) who found that a positive relationship was present between individuals who were exposed to stress and resilience. Furthermore, this could also suggest that participants engage in some post-traumatic growth, where they have positive experiences after challenges (Armstrong et al., 2014). Arguably, resilience is a form of PTG that occurs after exposure to stress (Oginska-Bulik, 2013). Therefore, stressful situations can also present themselves positively to employees to help build their resilience.

Training routes into the ambulance service have changed over the past decade with students now being educated “2 years at university” (P47, Male, Clinical/Operational, 0 shifts absent). As a requirement on a university course, students are required to undertake several placements where they work in a local ambulance service, responding and providing care to patients (Health Careers, 2018). However, it is evident that this experience is not enough for newer staff to build resilience, which occurs over a longer period of time. However, there is a consensus that to be able to do the ambulance role, employees should already be “pretty resilient to do the job” (P42, Male, Management, 0 shifts absent), suggesting that some employees may have a certain level of resilience before beginning a role in the ambulance service, which could be based on previous experience or due to having resilient personality traits (Skodol, 2010).

When discussing the participant's ability to implement coping strategies, participants reported that they encountered several barriers that prevented them from effectively coping with

stressors. One participant commented that they often aren't able to find the time to implement coping strategies.

> We work very long shifts so effectively I don't get home anyway till sort of gone 7 o'clock in the evening if I'm on the day shift…we'll have dinner and then basically watch an hour of TV and then if I'm back on days the next day I'm in bed by 10 o'clock so nothing there (P5, Male, Clinical/Operational, 4 shifts absent)

This extract indicates that a lack of time is a barrier for participants to be able to implement coping strategies in their daily lives. This lack of time is due to long working hours and 12-hour shifts that can leave individuals feeling tired and unable to engage in methods of coping that take time, such as engaging in hobbies.

Alongside this, participants believed that they were not equipped with the appropriate tools and resources to be able to cope effectively. One participant reported that "I don't think there's a great deal of support anywhere" (P5, Male, Clinical/Operational, 4 shifts absent), indicating that there is no support inside or outside the ambulance service. One participant stated that they felt they were being faced with an ultimatum "so it's either you cope amongst yourself and deal with it or you don't it's as simple as that" (P50, Female, Clinical/Operational, 0 shifts absent). This indicates that individuals have a choice over whether they cope with stressors or not and suggests that the ambulance service does not offer any support to help individuals cope. A lack of support from the service may affect their ability to cope as they may not know what to do and may want to seek guidance but are unable to (Halpern et al., 2009a).

When discussing social support, it became apparent that it was one example of a coping strategy that was prominent amongst participants. Seeking social support refers to the types of social support that individuals' access, the awareness of support for staff, barriers to seeking social support and the adequacy of support they experience.

Participants reported seeking support from several different sources within the workplace, such as colleagues and at home. Within the workplace, participants reported that they could easily turn to colleagues, particularly their crewmate.

> It's generally talking to my crewmate other staff on the station that work shifts they seem to be the best people to speak to about things I think it's because they're they know exactly what it's like what you've dealt with…in some respects they're the ones that if I was going to talk to

> anybody it would be my colleagues rather than somebody else (Participant 29, Male, Clinical/Operational, 0 shifts absent)

Such comments indicate that regular and consistent social support from the same colleagues could be beneficial as they have an idea of what other individuals have experienced on their shifts. This type of social support from colleagues is beneficial as informal conversations, such as discussing how a job went, can reduce levels of stress (Mildenhall, 2012). This makes individuals more likely to turn to their colleagues than other sources of support.

Alongside colleagues, one participant spoke about getting support from family members. Particularly, “if I’ve had a bad day I come home and I’ll just offload it onto my wife" (P4, Male, Clinical/Operational, 3 shifts absent). This suggests that individuals at home, such as spouses, maybe an outlet for frustrations experienced at work. However, there are consequences for offloading such as participants feeling that they dominate the conversation with their troubles and ‘it's all me me me sometimes and it can lead to an argument" (P4, Male, Clinical/Operational, 3 shifts absent). This extract demonstrates that social support from family could be viewed in a negative way, as if the individual is being a nuisance for talking about their problems as it may create a one-sided conversation if the family member lacks awareness of their job and associated stressors.

The type of support that is provided by the family is different from that of colleagues. Participant 4 reports "offload[ing]" to their wife about what has happened if they have a bad day. On the other hand, participant 29 reported seeking support from colleagues as they are the "best people to speak to about things” because they have similar experiences. Therefore, social support may serve two purposes. Firstly, family support may be provided for an outlet to discuss what has generally happened in the day, whereas support from colleagues may be based around specific things in the workplace, such as clinical advice.

Despite staff seeking support from colleagues and family, it is apparent that some participants are aware of social support networks, whereas others are not. Participants report a level of "understanding that there are people at the end of the phone nothing is ever as bad as you think (P19, Female, Clinical/Operational, 40 shifts absent). This extract indicates that if individuals are aware of the support around them, they may perceive that they are better able to cope with the stressor. Similarly, such comments suggest that there is an understanding that help is available to staff if they need it.

There is a general understanding that support is available to staff, particularly formal support networks that the service offer. Participants reported formal support programmes that are

offered to staff, which include “a confidential sort of counselling service” in addition to “specific support channels available for traumatic incidents”, which are available to both “people who are going out in the ambulance… and control room staff who’ve been exposed by telephone” (P42, Male, Management, 0 shifts absent). Participant 42 is aware of the sources of support that are offered to staff; however, this could be due to their position as a manager.

Although staff are aware of the support that is available to them within the service, Adams et al. (2014) argue that there are several barriers to accessing support within the ambulance service. The barriers that participants noted within interviews include previous experiences of seeking support, lack of visible management, inability to admit vulnerability and need for support.

One participant noted that it takes confidence to seek support, which some members of the ambulance service may not have.

> If you’ve got the balls about you to take responsibility yourself as I did and I also had my own therapist that I could turn to (P49, Female, Clinical/Operational, 5 shifts absent)

Participant 49 suggests that individuals need "balls to take responsibility", this suggests that there is a level of strength that comes along with seeking social support. Prior experiences seeking support also seem to feed into the confidence that individuals have to seek future support. Participant 49 had access to their own therapist, which they have sought support from previously, and this experience may feed into their confidence to seek further support.

On the other hand, another participant had a negative experience of social support, which left them feeling patronised.

> We’ve been given squeezy ambulances to squeeze if we get tense and I’m thinking right okay …I find [this] so patronising and I’ve told them so they gave us lollipops to hand out if we feel like somebody’s done a really good job and I’m thinking I’m sorry but I left junior school at the age of 10 you know we’re flipping adults just treat us like adults you know (P34, Male, Clinical/Operational, 0 shifts absent)

Participant 34 provides an account of what they deemed inappropriate support for staff, which includes the use of "squeezy ambulance" and lollipops. It is evident that this is not the type of support that staff require within the service and makes them feel like children, rather than being respected like adults. As a result, feeling patronised may be a deterrent to seeking social support

in the future, if this is the experience that individuals have. They may fear that they will be provided with the same type of social support in the future, and this may serve as a barrier.

Within the workplace, line managers are usually the first individuals staff confide in when they need assistance (Hugelius et al., 2014). Therefore, when staff are unable to obtain support from their managers, this can serve as a barrier to accessing social support. In particular, a lack of visible management is problematic.

> I suppose my immediate line manager is always there often you don't see a lot they're not that visible because they work [different] shifts so you don't see them and then there's a lot of time constraints to sit down (P4, Male, Clinical/Operational, 3 shifts absent)

Visible management refers to managerial colleagues being seen in the workplace. Because employees do not often see their managers in the workplace, due to working different shifts, they are unable to approach them for support. Participant 4 perceives that their line manager is there to offer support, but it is difficult to obtain this because they are not visible within the workplace. To add to this, when managers are available employees are not able to find time to discuss problems with their managers.

> I think conversation communications always been a big thing and it's something we don't do enough because the right people aren't in the right places at the right time we can go through I could probably go through a month at work without seeing a manager quite easily now (P1, Male, Clinical/Operational, 0 shifts absent)

For participant 1, communication is an important component of seeking support that they do not feel is happening. This is due to the lack of visible management where they have not seen a manager over a month, which is an extended amount of time. Participant 1 also refers to the "right people aren't in the right places at the right time" this could refer to the fact that when working a night shift, employees may not have access to staff in human resources or other colleagues that may not work shifts.

From a management perspective, one participant recognised that because it's not always possible to seek support from management, there are other programmes in place to fill the gap.

> We have a voluntary scheme within [*redacted*] which has been very successful it's a peer to peer support programme it recognises that it's not everyone's answer to being challenged to go and find your manager

> and go and have a chat you can't always do that particularly if you're one of the colleagues from out on the road you may be miles away from your ambulance station so to try and make sure that support is available is kind of a you know uniform where ever you are (P42, Male, Management, 0 shifts absent)

The ambulance service does recognise that staff out on the road are not always able to seek support from their management. Other support systems have been put in place because of this, such as the peer to peer support network. However, it seems that participants value management support within the ambulance service and may prefer it over support from others, such as the peer to peer network.

Another barrier to social support stems from the inability to admit vulnerability and the need for support. This stems from a culture of bravado (Bounds, 2006) that is present within the ambulance service where staff feel they are unprofessional for expressing emotions (Steen et al., 1997). One participant stated that this was seen amongst men in the ambulance service.

> I think there's still that thing in the ambulance service that it's almost like a weakness for you to admit that you're feeling vulnerable…but I mean it's gradually changing…I think that's why a lot of people don't go for help when they need it because especially blokes because we've had to man up a bit and so we don't often like to talk about feelings and things but it is quite important to do that (P30, Male, Clinical/Operational, 30 shifts absent)

Participant 30 refers to admitting you need support as a "weakness", which indicates that admitting you need help is a fault or disadvantage of the individual. However, participant 30 suggests that there seems to be more of an acceptance of mental illness and wellbeing in the ambulance service. For example, the ambulance service of interest was one of the first ambulance services to sign the Blue Light Pledge to reduce mental health stigma (Dodd, 2017). However, this may not impact the stigma that each individual has about themselves and mental health. By not seeking social support due to the fear of being considered weak, individuals may be at risk for adverse consequences, including sickness absence and more severe mental health disorders (Roberts et al., 2015).

In addition to participants feeling like they could not talk about their emotions and feelings, staff also found it difficult to seek support surrounding clinical problems due to the fear of being seen as underqualified.

> You don’t feel that you can talk to somebody you think that maybe you feel inadequate for wanting to talk about it thinking well they’ll think that I don’t know what I’m doing and I shouldn’t be qualified and I’m punching above my weight so you’re worried about dropping yourself in it I suppose as being inadequate or have clinically failed in some way so that fear comes in so you don’t really particularly want to talk about it (P49, Female, Clinical/Operational, 5 shifts absent)

This may stem from the imposter syndrome, which is where individuals feel fraudulent in their achievements (Slank, 2019). Imposter syndrome originates from the belief that one does not deserve to be in the position that they are in, despite adequate training (Warraich et al., 2017). Participant 49 suggests that imposter syndrome is something that holds them back from seeking support, because of the fear that they don’t want to be found out that they have “clinically failed in some way”.

Seeking social support is considered an effective method of coping with stress (e.g. Daniels & Guppy, 1994). However, not all staff receive adequate support in the ambulance service. Inadequate support increases stress and has consequences for an individual's mental and physical health (Petrie et al., 2018; Sterud et al., 2008).

Participants reported feeling both adequately supported with the clinical side of the job. Participants felt if there were “clinical concerns then yeah definitely supported… the CSMs [Clinical Support Managers] are really good that you can ask them anything and they’ll give you answers” (P46, Male, Clinical/Operational, 1 shift absent). This indicates that certain members of staff are approachable in the service and are happy to provide social support to others, particularly with clinical problems.

Similar to this, when discussing support provided by other colleagues, one participant stated "I'll talk to colleagues about stuff and I'll open up" (P4, Male, Clinical/Operational, 3 shifts absent), suggesting that other colleagues are a useful source of adequate support in the service. However, on the whole, participants do not feel they are adequately supported in the ambulance service.

Participants suggest that the “support networks at work are poor” (P50, Female, Clinical/Operational, 0 shifts absent). This may be partly due to the idea that “there’s no real support there after an incident… it’s very much a tick box exercise” (P47, Male, Clinical/Operational, 0 shifts absent). Such comments indicate that there is a gap in support for

staff once they have attended a job that had affected them. From this, participants have developed a perception that the ambulance service does not care about their wellbeing.

One participant described the support the ambulance service provides as "paid lip service" (P4, Male, Clinical/Operational, 3 shifts absent), indicating that staff believe that the ambulance service provides support because they are required to, as they have a duty of care to protect their staff. However, participants believe that the ambulance service looks like they are offering support to staff, but in reality, they are not.

Participants report the consequences of inadequate support "evidenced by the number of paramedics particularly who are leaving" (P47, Male, Clinical/Operational, 0 shifts absent). The high turnover of staff in the service suggests that employees are fed up with not receiving appropriate support and are seeking other employment.

Experiencing stress, coping with stress and a lack of social support are some of the reasons for sickness absence that are related to physical and psychological wellbeing. There is evidence that stress affects the immune system and increases the likelihood of individuals becoming sick and engaging in sickness absence (Dhabhar, 2009). This was supported by participants when discussing reasons for sickness absence that were related to physical illness. One participant stated that they had “a couple of tonsillitis ear nose and throat type things so if I’m getting run down that’s my weak spot it’s that I always get tonsillitis” (P49, Female, Clinical/Operational, 5 shifts absent). This extract demonstrates consistent physical illness and accompanying symptoms that occur when this participant is faced with feeling run down, which could be due to an inability to recover effectively from work. The participant seems to have developed an association between feeling run down and experiencing tonsillitis. This could be partly explained within Mechanic’s (1986) illness behaviour; this participant may engage in the process of observing their body for abnormalities whilst establishing and explaining the symptoms they experience. For example, if the participant feels exhausted or tired, this may trigger the observations and may explain the symptoms as a result of ‘feeling run down'.

The method of engaging in sickness absence due to mental illness, physical illness and stress can be seen within participants using sickness absence in order to ‘have a break from work'. For example, one participant commented that "we just get hammered and hammered all the time…[I] will have a week off just to reset myself and calm down" (P1, Male, Clinical/Operational, 0 shifts absent). This extract demonstrates the logic that after prolonged time at work, staff require time off. The idea of resetting yourself refers to taking a step back from the situation and bringing focus to something else in life, such as family or friends. Such

a process enables an individual to relieve the tension and engage in the process of recovery. With reference to recovery, one participant talks about using sickness absence as a way to recover from ‘heavy shifts'.

> I know that when you’ve had quite a lot of heavy shifts you’re just thinking I could just do with a couple of extra days just to recover from these shifts and if you can’t get them the only thing to do would be to go off sick (P29, Male, Clinical/Operational, 0 shifts absent)

Such examples refer to the thoughts that one may have after having a series of shifts that have been ‘heavy’, which could mean both heavy due to stress and duration of the shift. As a result, there is both a physical and psychological desire and need to have time off work, to get away from the working environment to rest and recover. Engaging in sickness absence in order to recover also indicates that ambulance staff do not have effective recovery time during or after their shift.

6.2.3.2 Protection of others

Protection of others refers to the notion that participants engage in sickness absence as a method of protecting others by preventing the spread of infection to colleagues and patients. For example, one participant reported that they were absent from work due to a chest infection because they “could be making patients more sick or making my colleagues sick” (P29, Male, Clinical/Operational, 0 shifts absent). This extract indicates that sickness absence is used to prevent others from getting sick and acts as a method of protecting others from disease.

Participants noted that the protection of others is particularly important for colleagues who work in close proximity with one another, such as in the control room. One participant commented that “at close quarters like that [in the control room] you really wouldn’t want something like D and V [diarrhoea and vomiting] spreading through the control room because that would create a problem very quickly" (P42, Male, Management, 0 shifts absent). This indicates that individuals who do not have a leave of absence when sick could spread infection and disease, such as diarrhoea and vomiting to other colleagues, which could mean they then also get sick.

Protection of others also stems from protecting patients. One participant reported that “if I’m coming to work poorly and I’m passing my germs to cancer patients I could potentially kill them” (P50, Female, Clinical/Operational, 0 shifts absent). Such comments reflect the severity of what could happen if vulnerable patients are exposed to ambulance personnel who are sick

with an infectious disease. There is a sense that engaging in sickness absence is necessary as participants do not want to take the risk of infecting vulnerable patients and making their existing conditions worse.

6.2.4 Perceptions of sickness absence

Perceptions of sickness absence relate to the beliefs that participants' hold about sickness absence. The theme 'negative view of frequent sickness absence' refers to participants' negative beliefs about those who are frequently absent from work, which stems from the belief that illness is deviant. 'Acceptance of sickness absence' captures participants' understanding that sickness absence occurs naturally and that being sick cannot be avoided, particular within the ambulance service due to the increased risk of infection from patients. 'Strict and unsupportive sickness absence policy' relates to the policies and procedures that are in place for staff and participants perceive these to be a form of punishment whilst being difficult to understand. The theme 'methods to improve sickness absence' concerns the participant's views of how they believe sickness absence could be improved in the ambulance service.

6.2.4.1 Negative view of frequent sickness absence

When discussing the use of sickness absence within the ambulance service, participants reported that "there are certain individuals that will go sick a lot…you know they're serial people that you know are absent all the time" (Participant 19, Female, Clinical/Operational, 40 shifts absent). Such comments suggest that individuals who are frequently absent from work build a reputation for their sickness absence, which is wholly negative. The overall perception of these individuals places them as "regular offenders" (P5, Male, Clinical/Operational, 4 shifts absent) suggesting that sickness absence is a deviant behaviour that impacts the character of an individual.

This is evident within Parsons' (1951) definition of the sick role, whereby being ill is a deviant behaviour due to an individual being unable to function in society. Such comments from participants support the notion that being ill, and subsequently absent from work is a type of deviant behaviour. Therefore, individuals who are regularly absent from work are viewed in a negative way.

The negative perception of those who are frequently absent from work feeds into participants' discussions around the authenticity of the illness. One participant reported that "if it's a realistic one [cause of absence] people understand but if it's somebody who does it on a regular basis people get fed up of it" (Participant 47, Male, Clinical/Operational, 0 shifts absent). This indicates that there is a certain level of acceptance for the amount and reasons for sickness absence. Despite this, there is a fear that other employees who take frequent but justified absences would be 'tarred with the same brush" (P50, Female, Clinical/Operational, 0 shifts absent). Such comments indicate that participants are worried that a negative reputation will be built for them if they are frequently absent from work.

When discussing how this negative perception of frequent sickness absence arose, participants talked about the information they have received, which allows them to believe that the absence is not authentic. For example, one participant reported that "you know [they] go off sick and plaster [their] flipping holiday all over Facebook" (P1, Male, Clinical/Operational, 0 shifts absent). This extract indicates that some individuals are not using sickness absence for its original purpose of being absent from work because they are unfit to attend work (Heart of England NHS Trust, 2010). Such comments also suggest there may be an element of jealousy, that participants who are off sick are enjoying themselves whilst other colleagues remain at work, and this may contribute to the negative view that participants have about frequent sickness absence.

6.2.4.2 Acceptance of sickness absence

Participants reported a level of acceptance that sickness absence exists within the ambulance service. For example, one participant stated that "people naturally get sick you know" (P34, Male, Clinical/Operational, 0 shifts absent). This extract indicates that there is an understanding that employees cannot avoid being sick and it is a natural process that everyone experiences.

In addition to illness being a natural component amongst human beings, participants reported that the risk is elevated within the ambulance service, compared to other types of jobs.

> I would say there are going to be factors in that environment that make an elevated rate of sickness compared to somebody working in a finance job at a desk that's the reality that's going to happen you're going to get injuries and you're going to get exposure to illnesses and so on maybe we just have to accept it (P42, Male, Management, 0 shifts absent)

Some roles in the ambulance service, such as paramedics and ambulance technicians, are patient-focused meaning they engage in the treatment and transportation of patients with a variety of illnesses and injuries (Caroline, 2008). As a result of involvement with patients who are critically ill with possible infectious health conditions (Roberts et al., 2015), participants reported that there was an increased risk of infection within their working environment. One participant reported that “they’re in people’s homes they’re in the back of the ambulance they're going into A&E they’re bound to pick cough colds diarrhoea up" (P34, Male, Clinical/Operational, 0 shifts absent). Such comments indicate that ambulance employees are working in an environment that is surrounded by disease, so it is not surprising that they have high levels of sickness absence.

This increased risk of picking up an infection also interacts with the stress that employee's experience. Increased levels of stress reduce the effectiveness of the immune system and make an individual more susceptible to illness (Dhabhar, 2009). In particular, one participant commented that "when you're stressed your immune system is lowered so you're going to pick things up more readily" (P30, Male, Clinical/Operational, 30 shifts absent). This extract indicates that not only are employees at risk of infection due to working with critically ill patients, but they are at further risk of becoming sick because of the stress and reduced efficiency of the immune system.

6.2.4.3 Strict and unfair sickness absence policy

Strict and unfair sickness absence policy concerns the negative perception that participants had surrounding the use and implementation of policy and procedures for sickness absence. One participant described the sickness absence policy as “a very regimental thing so they’re strict about it and they know how many episodes you have off” (P49, Female, Clinical/Operational, 5 shifts absent). Such comments suggest that there is no flexibility with the policy and that it follows a strict and set system with regards to how many sickness absence spells you are allowed.

Participants talked about having trigger points in the sickness absence policy "we've got certain triggers if you're off so much you trigger them" (P29, Male, Clinical/Operational, 0 shifts absent). This extract supports the idea that the sickness absence policy is a set system and follows a series of trigger points. Participants, however, viewed these trigger points as a method of punishment. For example, one participant reported that "they have all these triggers … ultimately you can be dismissed…there seems to be more and more punitive measures coming in to try and deter people from going sick” (P4, Male, Clinical/Operational, 3 shifts absent).

Such comments suggest that the sickness absence policy is in place to stop individuals from using sickness absence and forces individuals to remain at work, even when they are ill.

The perception that the sickness absence policy is strict feeds into the negative perception participants have about the policy. One participant commented that "I actually don't think it's worth the paper it's written on" (P19, Female, Clinical/Operational, 40 shifts absent). This extract indicates that participants view the policy as useless and holds no value and, in this case, indicates that participant 19 may have had previous poor experience with the policy. One participant spoke about their negative experience with the policy.

> I got a letter through saying that I had to go to this meeting I'm not sure how it was worded now but basically saying that it could lead to dismissal I thought all these years without any sickness and being off with stress and then two other illnesses just minor illnesses something like that being off and then getting this letter threatening me with the sack I thought that's a bit much really (P30, Male, Clinical/Operational, 30 shifts absent)

Such comments suggest a level of unfairness within the policy because previous records of sickness were not consulted. This reflects the use of the sickness absence policy, which takes an individual's absences at face value and considers the number of absences rather than the reason. As a result, there does not seem to be any flexibility in the policy and all individuals who reach a certain trigger stage of the sickness absence policy is at risk of dismissal.

When discussing the impact of this strict and unfair policy on those with chronic health conditions, one participant stated that “if I got cancer then and I was [off sick] would I go on the redeployment [the manager said] yeah and I’m thinking wow that is absolutely terrible” (P34, Male, Clinical/Operational, 0 shifts absent). This extract further highlights the negative perceptions of a strict and unfair sickness absence policy. Such comments indicate that there is no flexibility with individuals who are required to have frequent sickness absence spells due to life-threatening conditions. Moreover, the threat of dismissal for individuals who have conditions such as cancer further indicates how unsupportive the policy is, as these individuals cannot choose whether to go sick or not.

One participant reported that "the sickness absence policy isn't supportive of our role" (P49, Female, Clinical/Operational, 5 shifts absent). This indicates that aspects of the working environment, such as the increased risk of infection for road staff and injuries, are not being considered in the current policy. In particular, participants highlighted the need for the policy

to be "more accommodating for injuries at work" (P49, Female, Clinical/Operational, 5 shifts absent). This would mean that if staff had a work-related injury (such as a musculoskeletal injury due to lifting a patient) or were exposed to an infection that a patient had, they would not be penalised and risk dismissal.

6.2.4.4 Methods to improve sickness absence

With regards to improving sickness absence, participants reported several ways in which they believed sickness absence could be improved within the ambulance service. These methods include taking personal responsibility for health, health screenings and exercise incentives.

Participants felt that individuals needed to "take a bit of responsibility for their own health instead of just blaming the system all the time" (P1, Male, Clinical/Operational, 0 shifts absent). This indicates that individuals are in charge of their own health and should control their exposure to infection. For example, participants believed that "it's up to us individually to make sure we're really vigilant with wearing gloves using hand gels wearing masks" (P49, Female, Clinical/Operational, 5 shifts absent). This indicates that staff should take precautions when exposed to ill patients rather than blaming the ambulance service for exposing them to infections.

Participants also believed that the health of individuals could be assessed at work through health screenings. This is something that the ambulance service offered previously "when I first started every five years you'd go for a health screening… keeping an eye on your blood pressure your eyesight make sure your vaccines are up to date" (P29, Male, Clinical/Operational, 0 shifts absent). However, nowadays "there doesn't seem to be any particular health screening if you like it is more or less left up to yourself I mean the only time I visited my doctors is when I've actually been unwell" (P29, Male, Clinical/Operational, 0 shifts absent). This indicates that health screenings are no longer offered to employees, which means that individuals are left in control of their own health. Participant 29 suggests that this may be too late for some as they only attend the doctors when they are actually unwell. There seems to be a retroactive emphasis where individuals only seek help if they require it, rather than preventing health conditions from developing in the first place. By monitoring employees' eyesight, blood pressure and vaccinations can help prevent chronic conditions associated with these, such as heart conditions.

With regards to improving employee health, participants believe that the ambulance service should provide staff with incentives to engage in exercise. Physical activity is linked to several

positive health outcomes and can decrease the individual's risk of sickness absence (Amlani & Munir, 2014).

> It would be nice if [*redacted*] did that to be fair like gym membership or something like that it sounds daft but I can't afford gym membership if I wanted it so if there was a significant discount with that then I would probably use it and it would be nice to do more fitness stuff" (P46, Male, Clinical/Operational, 1 shift absent)

Offering incentives on fitness activities, such as the gym, could increase exercise participation. Financial constraints, such as those described by participant 46, may be a barrier for employees to engage in physical activity. Therefore, providing staff with a discount or free membership could increase their likelihood of engaging in physical activity.

6.2.5 Experiences of sickness absence

Experiences of sickness absence refers to participants' personal experience of sickness absence. There are three main themes that encapsulate participants' experiences of sickness absence which refer to 'using sickness absence as other types of leave', 'making a decision to go sick' and 'guilt for being absent'. The theme 'using sickness absence as other types of leave' refers to participants using sickness absence for a holiday rather than because they are ill and are unable to perform their daily duties. 'Attending work whilst sick" concerns the reasons why participants attend work despite being sick. This theme has two sub-themes which refer to some of the thoughts that participants engage in during the decision-making process. The first is 'scared to go sick' and refers to the fear participants have for going sick due to the punitive measures in place if they have too much sickness absence. The second is 'presenteeism' which is linked to 'scared to go sick' as participants who felt scared to go in sick would be present at work, despite being ill. The final theme 'guilt for being absent' relates to the feeling that participants experience when they engage in sickness absence. This stems from the view that participants are letting colleagues and patients down.

6.2.5.1 Using sickness absence as other types of leave

Although sickness absence is traditionally viewed as absence from work due to an accident, illness or chronic condition (Heart of England NHS Trust, 2010), participants report using sickness absence as other types of leave. One participant reported that "there's a lot of frustration within the ambulance service and a lot of it is very basic stuff and its down to stuff like getting holiday" (P19, Female, Clinical/Operational, 40 shifts absent). This extract indicates that participants feel that obtaining leave, such as holiday, is challenging, which is

frustrating for employees. Because of this, it is evident that some individuals use sickness absence as other types of leave rather than using it for when they are sick.

With regards to obtaining annual leave, participants reported that sickness absence was used instead of attempting to acquire a holiday. One participant stated that "there are probably some people that if they know they're not going to get time off when they want it they will probably use sickness as leave to get the time they want" (P29, Male, Clinical/Operational, 0 shifts absent). This indicates that sickness absence could be used by individuals to have specific time off from work rather than attempting to access annual leave, which is difficult and frustrating. This also highlights that sickness absence is used as a more flexible way of accessing time off work.

When discussing why participants felt they needed to use sickness absence as a way to obtain time off from work, one participant commented that other colleagues would "book a weeks sickness… just like they'd book a week's holiday I guess if you feel like your underpaid and undervalued then it's a way of getting something back out of the service" (P46, Male, Clinical/Operational, 1 shift absent). Such comments further highlight the flexible nature of sickness absence, particularly when staff feel they deserve to take time off work. This is due to staff feeling undervalued within the workplace, which also indicates sickness absence may be used as retaliation in response to this.

6.2.5.1 Attending work whilst sick

When discussing their experiences with sickness absence, participants reported that occasionally they attend work whilst sick, which is also known as presenteeism (Schultz & Edington, 2007). One participant stated that they have no choice to come into work when they are sick.

> I'll often come into work not able to talk I'll croak and people will say what the hell are you doing at work well I've got no choice I've got to otherwise you know I'm threatened to have my job taken away from me (P49, Female, Clinical/Operational, 5 shifts absent)

Such comments indicate that participants have a fear of sickness absence due to the severe repercussions of having too many absence spells. Presenteeism has been linked to future episodes of sickness absence (Taloyan et al., 2012), suggesting that participants are putting themselves at further risk of ill health if they attend work whilst sick. This may be due to the inability to recover from infection or disease whilst at work. The extract above suggests that

participants have no other option than to work when sick; otherwise, there are severe consequences.

This fear of sickness absence also feeds into the decision-making process that participants have when weighing up the option of whether to engage in sickness absence. One participant reported that "I could have done with some [sickness absence] but you don't because it stresses you out thinking about it so I'd rather just go to work and come home knowing I've done it" (P50, Female, Clinical/Operational, 0 shifts absent). This extract suggests that it is second nature to go to work when sick because it avoids an internal battle that causes frustration and potentially additional stress for the individual. This internal battle of deciding whether to attend work or not is also evidenced by the participant's attempts to get reassurance from management.

> I remember one shift I went in and I was sneezing everywhere and I wasn't sure if to turn up or not I was fine in myself but I couldn't stop sneezing because I had a cold quite a bad one I say to my line manager and she said if you feel all right then carry on so I did carry on but I did just need to sneeze all over other colleagues and patients all night (P46, Male, Clinical/Operational, 1 shift absent)

Such comments indicate that participants seek reassurance from other colleagues in order to justify their decision to either attend work or engage in sickness absence. This justification is also rooted in the perceptions that other colleagues may have about specific reasons for sickness absence. For example, one participant, when they had a cold, stated that "I can't go off sick because it's frowned upon not for a cold people would laugh at you" (P50, Female, Clinical/Operational, 0 shifts absent). This extract indicates that minor illnesses, such as a cold, were not viewed as legitimate absences. Such constructions meant that employees did not feel like they could take a leave of absence for minor illnesses and that it would have to be something major in order to avoid judgement from other employees.

A difference was identified in the way that management and operational/clinical participants viewed presenteeism. One participant who had managerial experience commented that they have the opportunity to "ring up and sort of say right I'm not going out to any patients today but I've got all this paperwork to do and all that paperwork to do so I'll just stop in the station and get it done" (Participant 5, Male, Clinical/Operational, 4 shifts absent). However, another clinical/operational participant stated that "I've gone to work with a migraine and it affects my

vision I get peripheral vision issues so my colleague is having to do all the driving" (P49, Female, Clinical/Operational, 5 shifts absent). This extract indicates that staff with roles that involve being on the road attending to patients do not have this luxury of being able to choose whether or not they are responding to patients as it is the core part of their job. For management, they are able to choose to engage in alternative jobs whilst attending work sick, such as finishing paperwork in the office. This suggests that colleagues in the ambulance service have differing levels of control over the extent to which they are able to engage in presenteeism or sickness absence.

However, for management, there is also an increased pressure to engage in presenteeism because "nobody else could do what I was doing and there was things that had to be done had to be planned and sorted and nobody else could take that over" (P5, Male, Clinical/Operational, 4 shifts absent). This indicates that presenteeism in the ambulance service may also stem from a lack of qualified resources that are able to fill in for colleagues who are absent, particularly amongst management.

When discussing presenteeism, participants felt that the guilt they experience for being absent from work drove them to attend work whilst sick or return to work sooner than required.

The guilt participants felt for being absent from work stemmed from the perception that "the team is under such a massive amount of stress to lose somebody from the team does make a difference" (Participant 5, Male, Clinical/Operational, 4 shifts absent). Staff feel that being absent from work may impact the workload of staff that remain at work whilst they are on sickness absence. One participant reported that the guilt was related to "not wanting to let my crewmate down" (P29, Male, Clinical/Operational, 0 shifts absent). This indicates that engaging in sickness absence may be influenced by others and that individuals who take their colleagues into consideration may feel more guilt when taking a leave of absence.

Participants feeling guilty for taking sickness absence also stems from "management [make] you feel worse because you feel bad about the fact that there's an ambulance off the road because you haven't turned in" (P19, Female, Clinical/Operational, 40 shifts absent). Such comments indicate that management put pressure on staff to attend work and make them feel responsible for one less resource. The ambulance service is already under immense pressure to deliver a service that has suffered financial and resourcing cuts in the past decade (Leys, 2016). As a result, staff may feel guilty because they feel as if they are contributing to this problem of a lack of resources, particularly when management is suggesting you are the reason why an ambulance is off the road.

However, feeling guilty for taking a leave of absence can also influence individuals to engage in presenteeism. For example, one participant stated that "I felt that guilty that I went back" (P50, Female, Clinical/Operational). This extract suggests that guilt can be severe enough that it can force employees back to work before they are ready, which may worsen their condition depending on the illness. This may then subsequently lead to further sickness absence spells.

6.3 Summary

In summary, the findings from the quantitative phase have demonstrated an association between decreasing levels of social support and an increased likelihood of sickness absence. Moreover, associations were found between avoidance coping styles, mixed coping styles and an increased likelihood of sickness absence compared to rational coping styles. The findings from the qualitative phase have demonstrated that participants utilise sickness absence to maintain their physical and psychological wellbeing, when they are feeling run down and also to protect others. Participants also have a negative but accepting perception of sickness absence, demonstrating their understanding that sickness absence is likely to occur in the working environment. Participants also perceived the current sickness absence policy to be strict and unfair. With regards to participants' experiences of sickness absence, participants reported using sickness absence as other types of leave, such as annual leave and discussed engaging with presenteeism rather than sickness absence.

The following chapter will integrate the results from both phases to provide information on how the qualitative findings help support and explain the quantitative findings.

Chapter 7 Discussion of Results

Chapter 6 provided the results of the quantitative and qualitative phases of this explanatory sequential mixed methods study. Consistent with this type of mixed methods approach, this chapter presents the integration of the quantitative and qualitative results. As previously discussed in Chapter 5, priority was given to both phases as together they provide an

opportunity to expand on the association between stress, coping styles and sickness absence whilst providing insight into participants' experiences and perceptions.

The integration of mixed methods took place using two approaches as outlined in Chapter 4. Firstly, a participant selection model was used that allowed specific participants of interest from the quantitative phase (such as those with low or high levels of work stress), to be recruited for the qualitative phase. This ensured that participants with a diverse range of coping styles and experience with stress and sickness absence were interviewed.

The second method of integration utilises a weaving approach, proposed by Fetters et al. (2013), which forms the basis of this chapter. The method of weaving includes integrating the quantitative and qualitative phases on a case-by-case basis using the quantitative findings as the groupings. For example, any associations found between variables in the quantitative findings will be explained by the qualitative findings. Within this context, associations refer to any statistical relationships between variables as outlined in Chapter 6. Weaving is a useful approach in this context as it provides a narrative that enhances and provides explanations for the quantitative results (e.g. Abdoola et al., 2017).

7.3 The association between work-related stress and sickness absence

It was hypothesised that ambulance employees with higher levels of work stress (workload, perceived control, responsibility and low social support) would report a greater number of shifts absent across six months. The results provided partial support for this hypothesis as an association was only found between low social support and an increase in sickness absence. However, no association was found between other work-related stress (such as workload, perceived control, responsibility) and sickness absence.

These findings provide further support for the stress-reaction hypothesis and the theoretical framework developed in Chapter 2. The theoretical framework suggests there is a relationship between inappropriate coping resources (such as low social support) and exhaustion and immune system vulnerability leading to illness and sickness absence (Bakker et al., 2007). Moreover, the theoretical framework could also explain why no evidence was found for an association between workload, responsibility, control and sickness absence. This could be due to individual differences, such as personality or an evaluation of appropriate coping resources (Gründemann & Vurren, 1998; Hart & Cooper, 2001; Lazarus & Folkman, 1984) which meant that individuals' immune systems were not affected by the exposure to stress.

Furthermore, a possible explanation may be that a lack of social support is considered both a source of stress and as a method of coping with stress (Kleber & Van Der Ploeg, 2003). Therefore, social support would not only be beneficial in overcoming stress, but a lack of social support further intensifies the original stressor, increasing sickness absence (Sterud et al., 2008).

A lack of social support in the ambulance service may stem from several barriers including the culture of the ambulance service. Research has argued that a sense of bravado is central to the ambulance culture (Bounds, 2006), which results in employees being hesitant to discuss emotions due to a fear of being unprofessional (Steen et al., 1997). Moreover, social support for staff can also be obtained outside of the workplace with family and friends. Previous research has also suggested that within emergency services roles, obtaining support from family and friends can sometimes be difficult due to the reluctance of ambulance staff sharing details of the stressors they experience in the workplace (Mildenhall, 2012). Therefore, the finding that a lack of social support increases the likelihood of sickness absence coupled with the barriers ambulance service employees experience, could be an area of development with regards to an intervention that could reduce sickness absence.

Social support originates from the perception that an individual is "cared for and loved…esteemed and valued" feeling as if they "belong to a network of communication and mutual obligation" (Cobb, 1976, p. 300).

A lack of social support is considered a source of work-related stress as outlined by the Job-Demands-Resources model (Bakker et al., 2007) because of its ability to intensify job demands and other occupational stressors. Therefore, a lack of social support in the working environment could mean employees are more susceptible to experiencing higher levels of stress compared to those who have access to social support. Moreover, it is also considered a mechanism of coping that serves as a protective factor against stress (Ozdemir & Arslan, 2018). This suggests that social support has the potential to both increase and decrease levels of stress.

There are several types of social support that can be both formal, such as the Peer to Peer (P2P) programme, or informal such as having a coffee with a colleague (e.g. Hugelius et al., 2014). These can be further split into emotional (obtaining sympathy or care from others), instrumental (physical help), informational (advice and guidance) and appraisal (information for self-assessment) (Taylor, 2011).

Based on the theory surrounding stress and illness, an increase in stress can increase the likelihood of becoming ill due to the suppression of the immune system (Dhabhar, 2009). As

a result, the finding that decreased social support is associated with sickness absence suggests that social support may be a crucial factor in the relationship between work-related stress and sickness absence.

Social support can arise from several avenues including friends, family, colleagues and management (Donnelly et al., 2016). However, it was apparent that participants felt generally unsupported at work with one participant stating that "I don't think there's a great deal of support anywhere" (P5, Male, Clinical/Operational, 4 shifts absent). When discussing the sources of support that participants accessed, they spoke about obtaining support from family members, such as their partners. However, this type of social support came with several challenges including participants feeling as if they are creating a one-sided conversation, which sometimes led to arguments 'it's all me me me sometimes and it can lead to an argument" (P4, Male, Clinical/Operational, 3 shifts absent). Moreover, participants found that support from other colleagues was the best source of support as "they seem to be the best people to speak to about things I think it's because they're they know exactly what it's like what you've dealt with" (Participant 29, Male, Clinical/Operational, 0 shifts absent).

From the qualitative results, it seems that although some participants felt that they were being unsupported, participants did have access to social support networks such as other colleagues and friends or family members. Therefore, low social support in the ambulance service may not arise from the lack of opportunities to engage in social support but from other avenues, such as the barriers that participants experienced when seeking support.

Participants identified that confidence and previous experiences were a barrier to seeking social support. One participant felt patronised by the types of support the ambulance service had provided in the past.

> We've been given squeezy ambulances to squeeze if we get tense and I thinking right okay… I find this so patronising and I've told them so they gave us lollipops to hand out if we feel like somebody's done a really good job and I'm thinking I'm sorry but I left junior school at the age of 10 you know we're flipping adults just treat us like adults you know (P34, Male, Clinical/Operational, 0 shifts absent)

This negative experience that participants had may have affected their ability to seek support from the service in the future. Additionally, the perception that staff felt unsupported also stemmed from the lack of visible management within the workplace and the lack of time to be able to seek social support and have a conversation.

> I suppose my immediate line manager is always there often you don't see a lot they're not that visible because they work [different] shifts so you don't see them and then there's a lot of time constraints to sit down (P4, Male, Clinical/Operational, 3 shifts absent)

Additionally, when participants were discussing their stressors in the workplace, they referred to management being a source of stress. One participant spoke about dealing with "management issues" (P47, Male, Clinical/Operational, 0 shifts absent), which stemmed from a high turnover of management, which meant that "it's hard for anyone to build proper rapport… so I think when you go out and do your job you're pretty much working isolated (P19, Female, Clinical/Operational, 40 shifts absent). Overall, participants felt as if they were being mistreated and undervalued by management staff, which may explain why low levels of social support were found amongst participants in the quantitative phase.

It was evident that staff felt supported by other colleagues, such as their crewmates, but not by other members of staff, such as management. Participants also faced several barriers when accessing social support, which may have prevented them from receiving adequate support. Overall, the qualitative findings help explain why low levels of social support exist within the ambulance service. Moreover, the qualitative results are able to partly explain why social support is associated with stress, which stems from the notion that a lack of social support leads to increased levels of stress, as seen when discussing the stress experienced as a result of management issues.

The results from this study are consistent with previous research into ambulance wellbeing that suggests low levels of social support are present in the ambulance service (Mahony, 2001; Sterud et al., 2011; Young & Cooper, 1995). Furthermore, the results also support previous research that suggests the perception of social support is more important than whether social support is actually received by an individual (e.g. Soh et al., 2016). For example, this study did not measure the extent to which social support was received but measured how supported an individual felt by their colleagues, family, friends and management. As a result, this further highlights the importance of perceived social support in feeling like a valued and cared for member of staff.

Within the research, specific factors of work stress, such as workload, perceived control and responsibility, were not associated with increased sickness absence. This suggests that these sources of stress may not directly impact sickness absence as a whole. Evidence suggests that the ambulance service experience intense workloads, have limited control and high levels of

responsibility for patients (e.g. Johansson et al., 2013). However, this study did not provide any evidence that these sources of work-stress were associated with sickness absence.

It is important to note that although there was no evidence to suggest that workplace stressors of workload, perceived control and responsibility were associated with sickness absence, it does not mean that staff are not affected by these. The descriptive statistics for workload, perceived control and responsibility highlight that staff reported some/a lot of stress related to workload and responsibility and low levels of control. However, this study cannot determine whether these work-related stress factors had an impact on any other organisational outcomes, such as turnover.

7.4 The association between coping styles and sickness absence

It was also hypothesised that ambulance employees with avoidant coping styles will report a greater number of shifts absent across six months. The results supported the hypothesis as an association was found between avoidance coping and an increase in sickness absence, compared to rational coping. One unanticipated finding was an association between a mixture of coping styles and an increase in sickness absence, compared to rational coping.

With reference to the theoretical framework, inappropriate coping resources that do not effectively deal with the stressor could lead to the stressor being experienced continuously, leading to illness and subsequent sickness absence. This is supported within the literature surrounding coping styles and sickness absence with Gershon et al. (2008) suggesting avoidance mechanisms are not effective in reducing or tolerating the effects of stress.

The results from the quantitative phase found participants with avoidance coping styles were 4.83 times more likely to have a shift absent compared to those with rational coping styles. Avoidance coping styles are defined as a use of strategies that allow for individuals to avoid sources of stress (Chang et al., 2006). Avoidance coping can either take place through behaviour (such as physically withdrawing oneself from a situation) or cognitive (such as distraction) (Allott et al., 2015).

Participants reported using avoidance coping strategies both within the workplace and at home. For example, one participant stated that at work they "will get away from the situation if I can I'll go make the drinks for everyone just to get me out and away from the situation" (P34, Male, Clinical/Operational, 0 shifts absent). Whereas at home, participants had a chance to avoid the situation and distract themselves using hobbies such as “the guitar a bit the keyboards a bit just for my own pleasure… I find that a way of just kind of switching off if you like” (P29, Male,

Clinical/Operational, 0 shifts absent). These two extracts demonstrate both behavioural and cognitive avoidance strategies that participants use in different environments.

The qualitative results partly explain why avoidance coping is associated with an increased likelihood of sickness absence through the barriers participants experience when coping with stress. For example, one participant noted that a lack of time during a working day did not allow them to engage in coping strategies.

> We work very long shifts so effectively I don't get home anyway till sort of gone 7 o'clock in the evening if I'm on the day shift…we'll have dinner and then basically watch an hour of TV and then if I'm back on days the next day I'm in bed by 10 o'clock so nothing there (P5, Male, Clinical/Operational, 4 shifts absent)

This suggests that participants do not have the time to engage in problem-focused coping strategies, which could include seeking social support to address problems at work. Therefore, individuals may turn to using more immediate coping strategies to overcome the stress experienced. The literature suggests that engaging in avoidance coping is the first reaction to a stressful stimulus (Endler, 1997), which highlights why individuals who have a lack of time to cope may use this type of coping style. Moreover, the link to sickness absence stems from the stress being ineffectively dealt with, which is demonstrated in previous research that suggests avoidance coping strategies are ineffective as they do not deal with the root of the stressor (Hershcovis et al., 2018).

The association between avoidance coping and sickness absence can also be demonstrated by Kristensen's (1991) notion that sickness absence is a type of avoidance behaviour. Participants' reasons for engaging in sickness absence included using it as a way of having a break from work. One participant stated that "we just get hammered and hammered all the time…[I] will have a week off just to reset myself and calm down" (P1, Male, Clinical/Operational, 0 shifts absent). This partly explains why avoidance coping is associated with an increased likelihood of sickness absence as it can both be an ineffective coping mechanism and a reason for why individuals are absent from work.

A mixture of coping styles refers to participants that scored similarly on multiple coping styles, which suggests they engage in more than one type of coping strategy. Participants reported that previous experiences of difficulties shape the coping they engage in when exposed to stressors in the future.

> I've been hammered in the military for 20 odd years and 18 hour patrols and all that so you know a couple of miles on the truck [ambulance] is no big deal to me but I think some of the younger ones that are coming in haven't had that exposure (P1, Male, Clinical/Operational, 0 shifts absent)

For example, one participant stated that newly qualified staff are "struggling with the stress of the job" (P47, Male, Clinical/Operational, 0 shifts absent), which stems from the inability to build tolerance and resilience. As a result of this, individuals may use multiple coping strategies as they lack the experience as to which coping style is more appropriate for certain situations, which means they are unable to cope with stress effectively.

The association between an avoidant coping style and an increased likelihood of sickness absence could be explained through the use avoidant coping styles to physically and mentally withdraw from the workplace (Allott et al., 2015). Individuals who avoid stressors through distraction or physical withdrawal may avoid the workplace by using sickness absence, which supports Kristensen's (1991) theory that sickness absence is an avoidant coping mechanism. Van Rhenen et al. (2007) suggested that individuals who use sickness absence for the purpose of avoiding the working environment do not reduce the levels of stress they experience, as the stressors are still present when the individual returns from their absence (Herschcovis et al., 2018). This may partially explain why individuals who use avoidance coping mechanisms are more likely to engage in sickness absence if they do not actively cope with the stressor. Furthermore, these results may also be related to the stressors experienced in the working environment. For example, Endler (1997) suggested that avoidance coping is the first reaction to a stressful stimulus. Therefore, for ambulance employees, avoiding the stressor through distraction may be an appropriate method of coping to assist the employee in upholding their emotions in the workplace, particularly in front of patients.

Overall, the findings support previous research that identified individuals with avoidant coping styles are more likely to be absent from work (van Rhenen et al., 2008). Furthermore, it supports research that found evidence to suggest individuals with problem-focused or rational coping styles were less likely to be absent from work as no association was found between a rational coping style and sickness absence (Schreuder et al., 2011).

One unanticipated finding was the association between mixed coping styles and an increased likelihood of sickness absence. Individuals who had mixed coping styles were identified as having a mixture of coping if they scored highly on more than one coping style (Roger et al.,

1993). This result may suggest that compared to rational or problem-focused coping, having more than one coping style is detrimental and may increase sickness absence.

Participants with mixed coping styles reported having both rational and emotional, rational and detached or emotional and avoidance coping styles. One explanation for these results could stem from the participants use of these coping styles in specific situations. Skinner et al. (2003) highlighted that coping is not one fixed behaviour but a series of actions that are consistent over time. This may suggest that individuals with mixed coping styles may use a different coping style depending on the situation.

However, there is a lack of evidence to suggest that this why the participants scored highly on two coping styles. Traditionally, research into coping styles focuses on one or two coping styles as separate, independent factors (Trouillet et al., 2011). As a result, there is a lack of research investigating why and how a mixture of coping styles exists and the benefits or detriments this may have for individuals and the way they cope with stress.

With regards to the definition of coping styles, Sahler (2009) suggested coping styles combine an individual's personality, perception of the stress and locus of control. These factors individually concern complex human behaviour, therefore combining these to create one coping style promotes a reductionist viewpoint. The extent to which a questionnaire can group coping behaviours into one coping style is limited. This is due to the inability to provide a full typology of coping as individuals engage in a range of different actions when dealing with stressful situations (Skinner et al., 2003). As a result, the mixed coping styles seen within this research further highlights the complexity of grouping individuals into one coping style.

Another unanticipated finding from the quantitative phase was the number of shifts off sick for each employee group. Within the current study, management employees (within Team Leader or Operations Management roles) had, on average, a higher number of shifts absent compared to other employees such as Paramedics and Ambulance Technicians. Therefore, indicating the management employees may be the primary focus if the ambulance service aim to improve their levels of sickness absence.

Following on from the quantitative phase, the qualitative phase aimed to answer two research questions. Firstly, what are employees' reasons, experiences and perceptions of sickness absence? Secondly, what do ambulance staff perceive should be included in an intervention to target sickness absence?

Participants outlined that reasons for sickness absence went beyond the traditional definition of a period of absence from work occurring when an individual or their GP assesses the individual as being unfit to attend work due to the sudden onset of illness, chronic condition or accident. Reasons for sickness absence stemmed from their own physical and psychological wellbeing in addition to protecting others. Participants suggested that sickness absence was used to have a break from work, occurred when participants were feeling run down and because participants experienced stress, were unable to cope with stress or were unable to seek social support. Participants also reported using sickness absence as other types of leave, such as annual leave, due to the inability to access allocated time off work. Participants also reported that instead of engaging in sickness absence, they would frequently attend work when sick (also known as presenteeism) because they felt guilty for being off work or had a fear of engaging in more sickness absence because of having a negative effect on their record.

Overall, participants perceived sickness absence negatively but had a general acceptance of it, as they understood that it occurred frequently within their occupation due to the increased risk of infection. Participants perceived that there was a strict and unfair sickness absence policy that was used as punishment to staff. Despite an overall negative view of sickness absence, participants perceived that there were a number of methods that could be used to improve sickness absence in the organisation. These included taking precautions around ill patients, health screenings and introducing exercise incentives. These will be discussed in more detail in section 8.2.

Within the research, specific factors of work stress, such as workload, perceived control and responsibility, were not associated with increased sickness absence. The qualitative results highlight that there are potential deeper reasons as to why individuals engage in sickness absence that may not necessarily relate to stress. For example, participants reported using sickness absence in a more practical way because they were unable to obtain annual leave and needed a break from work. This suggests that there may be additional reasons as to why ambulance staff engage in sickness absence that goes beyond experiencing high levels of stress.

The qualitative results provided further explanation of the association between stress, coping styles and sickness absence. Throughout the interviews, participants suggested that sickness absence was used to have a break from work due to feeling run down, experiencing stress, were unable to cope and seek social support. Theoretical underpinnings of sickness absence suggest that an individual's experience of unhealth and illness can contribute to adopting the sick role and engaging in sickness absence (Alexanderson, 1998). This was supported within the qualitative interviews when participants suggested they used sickness absence if they were

feeling run down or needed a break from work. This highlights that if participants perceived they were feeling run down, then they engaged in sickness absence, which formed the first step in adopting the sick role.

Moreover, participants' accounts of their use of sickness absence supports the stress-reaction hypothesis, suggesting sickness absence occurs due to prolonged exposure to stress, although the quantitative findings did not support this. Although not previously considered as an underlying theoretical principle for this thesis, the withdrawal-hypothesis was also evident within participants' accounts of sickness absence. For example, within the need to take a break from the workplace or as a result of the inability to obtain and access allocated time off work (such as annual leave). Support for both the withdrawal and stress-reaction hypothesis highlight that there is not one, unanimous reason or underpinning theory for sickness absence, but highlights that it is individual and may occur for several reasons.

Participants reported engaging in presenteeism due to the guilt felt for being off work and due to the fear of sickness absence having a negative effect on their attendance record. This use of presenteeism could explain why sickness absence rates in the ambulance service are high, as presenteeism is a risk factor for future sickness absence spells (Taloyan et al., 2012). Webster et al. (2019) suggest this is due to the spread of infectious diseases when an individual attend work when ill. Furthermore, Hansen and Andersen (2009) suggests this is due to individuals having inadequate time to recover from illness when they attend work. As a result, it could be suggested that if employees fear the sickness absence policy, this fear may motivate them to attend work when sick. They are then putting themselves and other employees at risk of future sickness absence.

Previous research has stated that fear is a strong driver for engaging in presenteeism and can stem from the fear of dismissal or of negative attitudes towards an individual when they are off sick (Kinman et al., 2019). Participants perceived the sickness absence policy as strict, unfair and used to punish staff. This finding was supported by Kinman and colleagues who identified that a fear of sickness absence arises from punitive management and sickness absence policies that shape into an overall negative view of sickness absence. This is consistent with the findings in this thesis, as participants had a negative attitude towards sickness absence. As a result, there should be policies in place in order for individuals who take advantage of sickness absence to be sanctioned, but it should not come at a cost for individuals who are sick and require the time off from work to recover. However, there seems to be a thin line between individuals who take advantage of sickness absence and those who do not and both extremes should be mitigated, and a wider focus of overall health should be provided to staff.

With regards to participants' experiences of sickness absence, the decision to attend work or engage in sickness absence may be a stressful experience in itself. This is particularly relevant if employees are weighing up the positives and negatives of attending work by considering the fear and guilt of their decision as outlined by Kinman and colleagues (2019). Not only could this impact participant's decisions to engage in presenteeism or sickness absence but could increase their levels of stress.

Overall, the qualitative phase highlighted that ambulance employees are at an increased likelihood of sickness absence due to consistent exposure to infectious environments, such as patients' homes and hospitals. Therefore, there is a general understanding from participants that ambulance employees will experience a higher level of sickness absence due to increased exposure to infection. However, this study found that the problem lies within the sickness absence policy as participants believed that the current policy did not acknowledge these risks.

7.5 Summary

This chapter has demonstrated that the qualitative findings confirmed and helped formulate possible explanations for the findings in the quantitative phase. The qualitative findings confirmed the quantitative findings that a lack of social support was present within the participants' environments, further highlighting that social support is an area to focus on if the ambulance service want to improve sickness absence. Within the interviews, participants provided additional information with regards to why low social support was reported in the service. For example, participants stated that there were plenty of support services, but it was accessing these that were a barrier for employees.

The qualitative findings also supported the quantitative findings in relation to the coping styles that participants utilised. Participants reported that using cognitive and behavioural distractions to withdraw themselves from a stressful situation was particularly beneficial. Furthermore, the qualitative results suggest that participants engaged in avoidance coping as the first coping strategy as they did not have time to utilise other types of active coping mechanisms. As for mixed coping styles and an increase in sickness absence, the qualitative findings suggested this may be due to an inability to build appropriate coping strategies.

Chapter 8 Conclusion

8.1 Overview of thesis' aims and objectives

This thesis originated from theory surrounding stress and coping that suggested sickness absence is due to increased exposure to stress in the environment (Schaufeli et al., 2009). Research suggests that ambulance service employees are exposed to several operational stressors, such as workload, a lack of control and responsibility in addition to daily hassles (Larsson et al., 2016). Moreover, theory surrounding stress, such as the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), suggests individuals appraise their ability to cope with stressors and if they perceive an inability to cope, they will continue to experience stress. Specific coping styles, such as avoidant coping, have been associated with higher levels of sickness absence due to the maladaptive nature of the coping behaviours, as they do not target the stressor directly (Gershon et al., 2008; van Rhenen et al., 2008). Together, this evidence suggests that stress and an inability to cope may lead to higher levels of sickness absence.

Due to the theoretical and empirical evidence surrounding the relationship between stress, coping and sickness absence, the main aim of this thesis was to investigate sickness absence in the ambulance service and its association with stress and coping whilst developing ways in which it can be improved.

Firstly, a systematic review was conducted to establish any existing interventions that were effective in reducing sickness absence. As there was limited evidence of interventions within

the ambulance service, this review was widened to include healthcare workers and an applicability framework was applied to the interventions to assess whether they could be applied to the ambulance service population. The results from the systematic review highlighted that there is currently a lack of interventions to reduce sickness absence that can be adequately applied to the ambulance service due to constraints within delivery and acceptability by staff. To explore possibilities of improving sickness absence, key factors associated with sickness absence and the ambulance service were investigated using an explanatory, sequential mixed methods study. This study aimed to investigate the extent to which stress and coping styles were associated with sickness absence (quantitative phase) in addition to exploring employees' reasons, perceptions and experiences of sickness absence (qualitative phase).

Before discussing the results of the study two, it is important to consider the underpinning epistemological and ontological position of the researcher with regards to how pragmatism influenced the findings. Firstly, the findings have been interpreted with a pragmatism lens, meaning that a focus has been bought to the practical application of these findings to solve the research problem of sickness absence (see section 8.3). Furthermore, it is important to note that there is an understanding from a pragmatist perspective that other researchers may interpret the findings differently and that stress, coping styles and sickness absence only consist of a small area of the working environment and may not account for the overall picture.

8.2 Contributions to knowledge

Ambulance services in the United Kingdom have some of the highest sickness absence rates compared to other NHS employees (NHS Digital, 2019). Alongside this, the variability in sickness absence rates are evident in ambulance services across England, with the most common absences ranging from gastrointestinal problems, influenza and anxiety, stress and depression (East Midlands Ambulance Service, 2019). Previous research has focused on the impact of ambulance workload on general health (e.g. Betlehem et al., 2013) and older, descriptive studies have focused on identifying the causes of sickness absence in the UK ambulance service (Stilwell & Stilwell, 1984). However, research into organisational outcomes such as sickness absence within this population have focused on services in other countries such as Norway and Sweden (e.g. Aasa et al., 2005) and lack participants working in dispatch or 999 call centres.

The financial implications of sickness absence have been established by several reports such as the Boorman Review (2009) and by FTI Consulting (2015), both of whom specified that ambulance services could save money through reducing sickness absence. For example, FTI consulting suggested that if EMAS reduced their levels of sickness absence from above 5% to a level similar with WMAS (3.8%), they could save £5.7 million per year. Alongside the financial implications, research has identified an association between sickness absence and negative consequences, such as poor physical and mental health, lower perceived social support and future sickness absence spells. Therefore, this research is important to further understand the role of sickness absence in the ambulance service whilst providing recommendations for practice that could be implemented to meet NHS Improvement's 2022 sickness absence target (Carter, 2018). Together, this evidence further highlights that sickness absence should be at the forefront of organisational research, particularly within the ambulance service.

As a result of this, the current thesis makes an original contribution to knowledge in several ways. Firstly, this thesis has expanded the literature and theory surrounding the relationship between work-related stress, coping styles and sickness absence. In particular, the research has confirmed that a lack of social support, avoidance and mixed coping styles within the ambulance service are particularly influential factors in increasing the likelihood than an individual will engage in sickness absence. Secondly, this is one of the first studies in the ambulance service to investigate sickness absence as a behavioural response, as seen within the stress-reaction hypothesis. Therefore, this thesis has contributed a psychological understanding of the phenomenon to the body of knowledge. Finally, by investigating sickness absence from a behavioural and psychological perspective with a pragmatist lens, this thesis has provided further clarification on the practical ways that ambulance service could reduce sickness absence within their organisations (see section 8.4.)

Nevertheless, despite the original contributions to knowledge that this thesis has made in further understanding the associations between stress, coping styles and sickness absence, it is important to consider the strengths and limitations of the current study.

8.3 Strengths and limitations of the current study

This research offers a contemporary investigation of sickness absence in the ambulance service. The phenomenon has not been well researched in this population, with the most recent study being conducted by Stillwell and Stillwell (1984). This thesis is distinct compared to other research into sickness absence because it focuses on the influence of stress, which is one of the leading causes of sickness absence in the ambulance service (East Midlands Ambulance

Service, 2018). This thesis was founded on the plethora of research highlighting the stressors and strains that ambulance personnel undergo on a daily basis (Bohström et al., 2017; Donnelly, 2012). However, this thesis offers a new perspective on the stress that ambulance employees experience. Previous research has focused on the implications of ambulance staff being exposed to traumatic stress (e.g. Avraham et al., 2014), however, Boland et al. (2018) identified that severe, traumatic incidents are not encountered frequently. These findings suggest that the high level of stress experienced in the ambulance service stems from operational stressors, such as job demands, which are enduring sources of stress (Liberman et al., 2002). The current research considered this limitation and included four key areas of operational stress that were suggested in the literature as being key stressors in the ambulance service.

Moreover, the use of multiple methods within this thesis allowed for a more holistic investigation of sickness absence. The use of a systematic review was able to identify a major gap in the research in that there is a lack of interventions to reduce sickness absence for the ambulance service. As a result of this, the focus of the thesis turned to understanding sickness absence, particularly with regards to the influence of stress and coping styles. By using a mixed methods approach, the thesis was able to quantitatively investigate the association between key variables and identify participants of interest who exhibited high or low levels of job stress and sickness absence. Moreover, the qualitative phase allowed for participants' voices to be represented within the research. This allowed for participants to describe their own reasons, experiences and perceptions of sickness absence, which is something that previous research has failed to consider.

As outlined in Chapter 4 (section 4.5.1), the majority of studies investigating sickness absence in the workplace obtained data from large, secondary sources such as insurance registers or employee databases (e.g. Thorsen et al., 2019). However, this thesis provides a comprehensive assessment of sickness absence by collecting individual case data using shifts as a novel unit of measurement. This has allowed for a greater exploration of sickness absence on an individual level by establishing and matching the individual's sickness absence rate, level of stress and coping style to investigate the associations between them. Furthermore, this thesis could utilise this individual data to recruit participants to interviews. This approach allowed for a broader range of perspectives to be gathered and analysed.

One recommendation from the systematic review was to utilise a more consistent measure of sickness absence within the healthcare population. This current study implemented the use of shifts as a novel, sickness absence measurement, which provided an opportunity to compare

sickness absence rates across participants. Therefore, this was a particular strength of the current research.

Moreover, one limitation of previous studies identified in Chapter 2 was that ambulance research often focused on front-line paramedics who had direct contact with patients (e.g. Clohessy & Ehlers, 1999). As a result, there was a gap in the field for research into wider ambulance job roles such as call-takers and dispatch officers. A strength of this thesis is that a broader range of participants were recruited to this study including front-line paramedics in addition to call-takers, dispatch officers, clinical educators and management employees. Consequently, this research has the ability to generalise its findings to a broader range of staff in the service compared to previous research.

Another critique of previous research was the use of single measures of stress (such as focusing on one stressor). These were not appropriate for research regarding sickness absence as theory suggests that individuals who are exposed to several stressors have increased levels of sickness absence (e.g. Trybou et al., 2014). As a result, study 2 included four specific causes of stress that were highlighted in ambulance literature as the main causes of stress within the ambulance service. Including multiple measures of stress, therefore, strengthens this study as it has considered a wide range of stressors that are very specific to the ambulance service.

Another strength of this thesis was that with study 2, a range of demographic data was collected from participants including their age, sex, job role, in addition to their time spent in the service and health conditions. By collecting this data, the current study could include these variables within the DAG to establish whether they required adjustment within the statistical models. As a result, the current study investigates the association between work-related stress, coping styles and sickness absence whilst considering other potential confounding variables, such as health conditions, which may impact an individual's level of sickness absence.

Despite the strengths of this research, there are also several limitations to be considered. Although this study included a broader range of participants compared to previous research, this study recruited participants from only one ambulance service in the United Kingdom. Therefore, the results of study 2 cannot be generalised to other ambulance services outside of the one where the research was conducted. This is problematic when considering the variability of sickness absence rate across all ambulance organisations in the United Kingdom. In particular, the ambulance service recruited for this study had neither the highest nor the lowest sickness absence rate compared to other services.

Before recruiting participants for study 2, a priori sample size estimation was conducted using the guidance from Peduzzi et al. (1996)[15]. This calculation was derived from a formula that accounted for a proportion of positive cases and the number of independent variables. As a result, the calculation suggested approximately 100 participants. This provided a good guide to the number of participants required for the study. Other approaches, such as allocating 10 participants per predictor, is also a common method for estimating sample sizes using regression models. However, these are used for logistic regression and are not usually appropriate for negative binomial models, which often include a range of control variables, which goes above the 10 participants per predictor (Peduzzi et al., 1996).

Despite this, it is important to highlight that these calculations are merely an estimation and as a result does not consider the effect size (e.g. Batterham & Atkinson, 2005). Batterham and Atkinson suggest that it is not always useful to calculate a sample size estimation as there are other factors, such as the reliability of measures and research design that offer more importance than a target number of participants to recruit. Moreover, the current study utilised Directed Acyclic Graphs to determine how many variables should be controlled for. This arguably has more weight when developing a model, compared to sample size estimations.

One limitation of the current study is with relation to the representativeness of the sample to the current population. In Chapter 6 (section 6.1.1), a discussion of the participant characteristics of the current study and comparisons of the ambulance population are presented. Table 8 presented the differences in age between the ambulance service and the current study's population, demonstrated a large percentage difference between participants aged 20-29 years of age. Moreover, Table 9 demonstrated a percentage difference between female participants and the current study's sample. This is one limitation of the current study, as there is an underrepresentation of individuals aged 20-29 years and females. Nevertheless, the current sample was closely matched to the ambulance service's population, suggesting that overall the current study's participants were representative of at least one UK service.

This research was constrained to focusing on full-time ambulance employees. The exclusion criteria were set due to previous research suggesting that part-time employees do not experience the full extent of stressors in the workplace, and arguably, have more time off work to recover from exposure to stressors (Barck-Holst et al., 2017). As a result, study 2 recruited full-time members of staff to ensure consistency of stressors across the population. This means

[15] See section 5.1.2.2 for a discussion on the sample size estimation

that the results obtained from full-time members of staff are not applicable to part-time members of staff.

Additionally, one problem stemming from this approach is that individuals who had changed their working pattern by working part-time or reduced hours due to sickness were excluded from the study prior to participating. There is evidence that staff may engage in 'alternative duties' as part of their return to work from a period of sickness, which may mean they obtain a secondment to another department. For example, James et al. (2014) highlighted that this is common when an individual has sustained an injury in the field and cannot yet return to their main role. This could be to another area of the ambulance service such as administrator roles, which were not considered as part of this research. This serves as another limitation of the current study.

Access to participants was a limitation of the current research, due to the use of a singular ambulance service. The methods of recruitment outline in Figure 12 were effective in recruiting a number of participants, however, they are not without their limitations.

The recruitment strategy for this research included posters being displayed in ambulance services in addition to the research being advertised in the Actively Involved in Research (AIR) newsletter and in several emails to staff. The recruitment focused heavily on engaging individuals who were currently at work and were able to access their emails or were on station to view the posters. As a result, the recruitment strategy was unable to recruit individuals who may be on long-term sick leave and who were not accessing their emails. This is a flaw of the current research as perspectives from employees currently on sick leave were not considered unless they were actively engaging in the workplace, for example, by checking their emails.

Moreover, there is no guarantee that posters were displayed in all crew rooms across the locality, meaning that some employees may not have been aware of the research. Further to this, ambulance staff who do not work on station may have also been unaware of the research opportunity. As a result, the results cannot ascertain the breadth and depth of reasons, experiences and perceptions of sickness absence held by those in the ambulance service.

Another limitation to consider as part of the sampling strategy was that of self-selection. Participants self-selected themselves to take part in the research, which may have influenced their perceptions towards both the questionnaire and the semi-structured interview. Participants may have chosen to take part in the research due to experiencing high levels of stress, due to a specific job role or whether they had previous experience with sickness absence. For example, a participant may have had a negative attitude towards sickness absence if they had a prior

negative experience, which may have been their main motivation for taking part in the research. Therefore, the extent to which these motivations have influenced the results is unknown. This is particularly important with regards to the participant interviews where several participants discussed their negative experiences with sickness absence.

As a result of this self-selection, there could have been several confounding variables that were not considered within the regression models. One example of this is the specific station that each participant worked within. The ambulance stations consist of their own environment, with their own culture and working practices, which could influence staff perceptions of sickness absence in addition to their levels of stress and coping styles.

Moreover, this study intended to recruit a range of operational and management employees to the study. However, for the qualitative phase in particular, only one participant was employed in a management role. Despite this, three participants recruited to the study had previously been employed in a management role but were currently employed in an operational role. During the interviews, these participants drew on their management experience and were useful in providing additional management perspectives. Therefore, it was assumed within the qualitative phase that adequate numbers of management employees were recruited to that phase of the study. However, one problem that arose from this was that a lack of information was gathered during the interviews as to why these participants were no longer in management roles. One participant discussed their demotion from team leader to operational employee due to funding cuts, but no other information was provided from participants. Therefore, it cannot be ascertained the extent to which these participants acted in managerial roles, which may have limited the perspectives they were able to offer within the interviews.

With regards to the measurement of key variables within this study, the quantitative phase utilised self-report questionnaires[16]. Participants were first asked to complete the NIOSH Generic Job Stress Questionnaire to measure their levels of stress followed by completing the Coping Styles Questionnaire and providing information on their sickness absence measurement. With regards to the process of completion, it was deemed important that participants first consider the stress that they experienced at work, which could help them to provide context to the research. By following this measure with the Coping Styles Questionnaire, participants could then draw on those experiences to determine how they would typically cope with stressors. In reflection, it may have been more beneficial to ask the

[16] Please see section 4.4 and 5.1.2.3 for an overview of the measures selected in comparison with other types of measurement

participants about their sickness absence prior to gathering data on stress and coping styles. This would ensure that participants were not influenced by their levels of stress throughout the remainder of the questionnaire.

However, one limitation of the battery of questionnaires was their length, which was evidenced in the number of incomplete questionnaires. It was estimated that participants took 25 to 30 minutes to complete all questionnaires, whether this was online or on paper. This is problematic for research into ambulance employees because due to their shift patterns and responsibilities at home, may not want to complete a long questionnaire. Furthermore, due to questionnaires being sent via email, there is a likelihood that these emails were checked at work and completed during a break, which meant that participants may not have had the opportunity to fully complete the questionnaires. For future research, more concise measurements could be considered, such as the 28-item brief COPE derived from the COPE Inventory (Carver et al., 1989).

In addition to the sampling limitations of this study, there are also several limitations regarding the measurement of stress, coping styles and sickness absence within the research. Arguably, stress is a subjective experience because individuals may perceive and react to it differently depending on several factors such as their appraisal of the stressor (Lazarus & Folkman, 1984), their access to resources such as social support (Bakker et al., 2007) and individual factors (such as personality and ability to cope). Stress is also a physiological reaction, which results in a number of physical symptoms such as increased heart rate and blood pressure, due to the release of cortisol (Goldstein, 1987).

It could be argued that alone, either one of these measures does not fully measure the concept of stress. This is because on a physiological level, there is no accountability for the individual's perception of a stressor and relies purely on biological markers. Moreover, a focus on the psychological perception and interpretation of stressors may be biased due to the reliance on questionnaires or interviews, which may promote a social desirability bias (Donaldson & Grant-Vallone, 2002). For example, by focusing on the topics of stress, coping and sickness absence, this may have provided participants with an outlet for their dissatisfaction with their jobs and the organisation, which may have influenced their responses. As a result, study 2 may lack construct validity as only one measure was used to measure stress within the research.

In addition to validity, there are problems with reliability and the extent to which the measures are consistent across time periods. For example, Revelle and Condon (2019) state that reliability is asking "given a person's score on Test 1 at Time 1, what score should be expected

at a second measurement occasion?" (p. 2). Within the original articles, the extent to which the measures had external reliability were not tested, leading to a lack of information as to whether the measures had acceptable external reliability. This highlights the need to test these measures for reliability and validity within an ambulance population. However, it must be noted that this was not the main aim of this research due to time constraints and is an area for future exploration.

The NIOSH job stress questionnaire was utilised due to its applicability to a range of occupations and flexibility with allowing individual sub-scales to be chosen (as seen in Fujino, 2001). Using this questionnaire allowed for specific measurements of work stress, that were specific to ambulance staff, to be measured within the study. However, an overall job stress score could not be calculated because the social support scale provided by NIOSH was positively orientated. This meant that low scores on the social support scale indicated higher stress scores, whereas the other three scales were negatively oriented with high scores indicating higher stress scores. This is one limitation of using the NIOSH questionnaire as it did not provide any information regarding reverse scoring of items on the social support scale. Therefore, further research could be conducted into the reliability of the NIOSH questionnaire in relation to reverse scoring the items on the social support subscale. Nevertheless, this questionnaire was useful within this particular study as separate subscales could allow associations to be investigated between specific causes of stress and sickness absence, which was useful in establishing the focus of sickness absence interventions (i.e. social support rather than workload).

There are also limitations within the measurement of coping styles within this study. Research has highlighted that grouping behaviours together into coping styles is useful as it allows for associations to be drawn between specific types of coping and other outcomes, such as sickness absence (Roger et al., 1993). However, research has argued that grouping participants into coping styles is reductionist and doesn't fully consider the situational context (Lazarus, 2006). Therefore, it would have been beneficial to ask participants to consider a specific context, such as the working environment, as this would have provided a better insight into the coping styles utilised at work.

With regards to the measurement of sickness absence, this study measured sickness absence across a six-month period. Research has demonstrated that sickness absence fluctuates throughout the year and is particularly high within the winter months (Gianino et al., 2017). Therefore, participants completing the questionnaire during the winter months may have experienced increased sickness absence rates. Further to this, it became apparent in the

qualitative interviews that some participants had engaged in presenteeism. Therefore, it is difficult to establish a true sickness absence rate, that does not reflect seasonal fluctuations and presenteeism.

This thesis also utilised shifts as a novel sickness absence measurement. Using shifts as a measurement tool within this research helped to create an equal, quantifiable measurement for all members of staff within the study. For example, participants could work three 12-hour shifts or five 8-hour shifts. If days was used as a measurement, the individual who was at work three days a week would automatically have less sickness absence than an individual who was at work for five days. In the context of the ambulance service and their diverse nature of shift work, the traditional approaches to measurement using days, was not suitable.

Although shifts were a more appropriate measure for participants within a healthcare organisation, there were limitations of this approach. Primarily, the measurement of shifts across six-months was a measure of frequency, which failed to provide information regarding the duration and reasons for absences within this time period. For example, if a participant was absent for five shifts in six months, the measurement did not provide any information on how long these lasted and whether these were due to the same or different causes of absence. Despite asking participants for their reasons for sickness absence in the quantitative questionnaire, participants should have been asked how many illnesses they experienced and the dates of which these occurred.

As outlined by Hensing (2009) measures of duration are important because they help provide a comprehensive overview of an individual's sickness absence. However, measures of duration have been used when researching the withdrawal hypothesis rather than the stress-reaction hypothesis. For example, research has suggested factors such as low job satisfaction impacts an individual withdrawing from work using sickness absence for a prolonged period of time (Roelen et al., 2008). Nevertheless, including the duration of sickness absence would provide further information, which could help accurately measure sickness absence in this context.

In addition, the measurement of shifts did not account for the actual time spent in the workplace. For example, many participants disclosed that they worked overtime, which did not count towards their overall sickness absence rate. Therefore, the current measurement of shifts cannot account for any additional hours worked above and beyond what was originally scheduled by the rotas.

It is evident that shifts are a novel measurement of sickness absence but there are limitations with this approach. Nevertheless, it would be useful for future research to develop this approach

to also include overtime hours and the duration of sickness absence spells to ensure that it is an appropriate measurement for ambulance services.

Within the quantitative study, the cross-sectional nature of study increased the chances of unobserved heterogeneity (Arellano, 2003), suggesting that there may have been variables that were not included that may have been associated with sickness absence. For example, socioeconomic status, which may serve as an influential factor in whether an individual engages in sickness absence. Therefore, it cannot be ascertained whether this would have impacted the results.

The cross-sectional nature of study 2 meant that coping styles were assessed at one point in time and could reflect participants' current coping behaviours. The questionnaire asked participants to "describe the way you typically react to stress" and does not take into consideration the differences in coping mechanisms that may be displayed at home or work.

As a result of this, predictions cannot be made about the extent to which these coping styles remain consistent over time. This is partly due to the lack of consideration of situational factors, such as the location and type of stressor coping behaviours are used for. Lazarus (2006) stated that situational factors can be influential in whether individuals engage in certain coping behaviours. This further highlights a limitation of this current research as situational factors were not considered.

As part of the qualitative phase, participants were asked to take part in either a face-to-face or telephone interview. From a practical perspective, allowing participants to be interviewed via telephone was beneficial as this allowed for a wider range of participants to be recruited as they could conduct the interview from their own home (Hoppe et al., 2000). However, it became apparent that participants who chose face-to-face interviews provided longer interviews, which may have had an impact on the rapport built between the participants and the interviewer. Additionally, there were also concerns regarding the ambulance culture and whether participants would discuss information related to their personal experiences (Bounds, 2006). Therefore, this may have had an impact on the ability to engage in open and honest conversations with members of the ambulance service. This was discussed as part of the pilot interview with a Research Paramedic and as a result, additional questions were included in the interview schedule that allowed for rapport to be built. Additionally, guidance by Lincoln and Guba (1985) was followed in order to establish trustworthiness within the qualitative data collection. Information was provided to participants at the beginning of the interview, which asked them to be open and honest about their experiences.

Establishing honest and open conversations was also one of the main reasons as to why focus groups were not used as part of the data collection process. Arguably, focus groups are beneficial in obtaining a large quantity of qualitative data quickly, whilst allowing participants to discuss their experiences with one another (Nestel et al., 2012). However, focus groups were not utilised as part of this study due to the risk that including both management and operational employees in the focus group may undermine the ability to speak openly about experiences (Rosén et al., 2018). Therefore, semi-structured interviews were utilised as a method of data collection.

On the whole, there were several sampling limitations within the qualitative phase of the research. As highlighted above, there were problems regarding the self-selection of these individuals to the study and in particular, self-selection to the qualitative phase. As participants were asked within the quantitative phase consent form whether they would be happy to be contacted for an interview, some participants may have been more open to discuss their experiences that others.

Moreover, the recruitment strategy of choice was a participant selection model, which allowed for participants with specific characteristics to be recruited to the qualitative phase of the research. Although this was useful to gather some characteristics including levels of stress and sickness absence, it is evident that these characteristics may not reflect the full extent to those in the quantitative phase (such as levels of stress and sickness absence). Therefore, it would have been beneficial to recruit participants to the qualitative phase using a different recruitment method. For example, rather than recruiting participants from the quantitative phase, the qualitative study could have recruited as a separate study. This could have included meeting with individuals in ambulance stations and having an increased presence, with the researcher promoting the study. This may have been beneficial in increasing participation rates across the studies.

Despite these limitations, this study contributes and provides further understanding into the association between work-related stress, coping styles and sickness absence. In particular, the study has gathered evidence in order to make recommendations to improve sickness absence in the ambulance service from both quantitative and qualitative data collection methods. The following section will discuss these implications for practice, drawing on evidence from study 1 (systematic review) and study 2 (explanatory sequential mixed methods study).

8.4 Implications for practice

The findings of this study have important implications for practice in relation to improving sickness absence of employees in the ambulance service. As outlined in Chapter 3, there are several challenges in relation to implementing specific interventions to reduce sickness absence such as resources, the potential to promote presenteeism and the receptiveness of the ambulance service to implement policy change and test interventions. Moreover, Kristensen (1991) argues that sickness absence should not be reduced, but focus should be bought to the overall health of the individual. This is particularly important for ambulance services as the qualitative phase of study 2 demonstrated that staff have engaged in presenteeism. Therefore, this following section will focus on providing evidence-based suggestions to improve sickness absence and the general health of staff in the ambulance service by drawing on potential ideas for intervention development. Table 14 provides an overview of key findings and recommendations for ambulance services.

Table 14. Overview of key findings from the thesis and recommendations for ambulance services

Key findings from thesis	Recommendations for ambulance services
	• Design and implement interventions to increase social support for employees • Consider delivery and design of support interventions to overcome barriers to accessing support (e.g. accessible online)
Low levels of social support are associated with increased likelihood of sickness absence	• Intervention should focus on building relationships between employees, particularly employees and line managers • Management staff (team leaders and senior management) to adopt open-door policy • Increase opportunities for colleagues to interact with one another • Provide an opportunity for down-time between calls
	• Develop a support service for family of ambulance employees on how to support and communicate with their family members in the service
Lack of flexibility around obtaining time off from work	• Develop a more flexible annual leave system managed at potentially a station level
Unsupportive sickness absence policy	• Develop a flexible and more role-appropriate sickness absence policy • Consider the exposure to infection in working environments for front-line staff
Promote a healthy workforce	• Offer exercise incentives to employees (e.g. discounted gym membership) • Offer health screenings (e.g. blood pressure, eyesight, maintaining/updating vaccinations)
Develop appropriate coping styles	• Include information on effective methods to cope with stress within paramedic education programmes

Findings from the quantitative study suggest that low levels of social support are associated with an increased likelihood of sickness absence. As a result, there is a need for interventions to focus on increasing the social support for employees in the ambulance service. Findings from the qualitative phase suggest that employees find it difficult to form relationships with their managers due to the high turnover of management staff in the service and due to a lack of visible management on station. Therefore, potential interventions to increase levels of social support should focus on building relationships between employees, and in particular between employees and their line managers. Management staff could adopt an open-door policy where members of staff are able to meet with their managers whenever they would like (Shenhar, 1993). Research into the effectiveness of open-door policies have found that it increases the perception of fairness in the workplace (Ruiz-Quintanilla & Blancero, 1996).

Interestingly, the open-door policy could apply to senior management teams in addition to Team Leaders and Operations Management. This is because findings from the quantitative phase demonstrated that Team Leaders and Operations Management had the highest average shifts absent. Arguably, this is a population that should be focused on in relation to improving sickness absence rates.

There may also be an opportunity for the ambulance service to implement more opportunities for crewmates to interact with one another. For example, participants reported that they felt like they were constantly rushing from job to job as control staff would send them straight to another job without any downtime. To overcome this and to increase the likelihood of social support between crewmates, employees should have an opportunity for downtime before moving to the next job. Downtime has been particularly useful when ambulance staff are faced with critical incidents and it also reduces the likelihood of staff experiencing depression (Bohström et al., 2017; Halpern et al., 2014).

Furthermore, participants also highlighted the importance of social support from family and friends to offer a general outlet from work. Charities, such as the Ambulance Staff Charity, offer support for family members of ambulance staff. Whilst Mind offer information on how to support family members who are employees in the emergency services (Mind, 2013). However, Mildenhall (2012) argues that employees may be hesitant to share details and stressors of their role with family and friends. Therefore, there may also be an opportunity to develop a support service specifically for family members of ambulance staff to obtain information on how to support and communicate with family members in the ambulance service.

Given that a lack of social support is associated with an increased likelihood of sickness absence, it is expected that ambulance staff may have limited access to support services within the workplace. However, this is not the case with participants in the qualitative phase stating that they understood what support services were in place but suggest there were other barriers to accessing support. For example, the time to access support services is limited in the ambulance service, particularly when staff work long shifts and have intense workloads. This was highlighted in Chapter 3, as one of the barriers for applying interventions to the ambulance service, which stemmed from the location and timing of the intervention. Therefore, it may be beneficial to investigate other intervention designs, such as an online support system, for staff to access on the go, for example, during their downtime on the job or at home.

There are already a variety of online support services such as *7 Cups*, which offer free, online support run through the use of volunteers where members can also purchase online counselling sessions (Doran et al., 2019). This technology has not yet been assessed for its effectiveness in increasing social support and currently a platform does not exist specifically for members of the ambulance service. However, offering tailored, online social support to employees in the ambulance service may increase the perception of social support, which is an important factor in relation to staff feeling more valued within an organisation (Soh et al., 2016). Together, there are several changes that could be made with regards to the accessibility and perception of social support that the ambulance service offer that could have a positive impact on overall health and sickness absence.

With regards to improving sickness absence within the ambulance service, greater efforts are needed to ensure that staff are able to obtain annual leave when they require it. For example, research has identified that being unable to take flexible annual leave has the potential to impact an individual's health, well-being and work-life balance (Skinner & Pocock, 2013). The problem with the current annual leave system was that participants felt they were unable to get the time off that they wanted. Therefore, the development of a more flexible annual leave system managed at potentially a station level is required. This would help in improving sickness absence rates as participants may be less encouraged to use sickness absence as an opportunity to take a break from work.

Continued efforts are needed by the ambulance service to ensure there is a certain level of flexibility within the sickness absence policy. The findings from this thesis highlight that the current policy is not supportive of the type of role employees engage in. For example, participants noted that the policy was not supportive of their role, particularly in relation to the increased infection that they are exposed to in their working environment alongside the risk of

injury. Therefore, one implication for practice is to consider including a flexible sickness absence policy where certain work-related sickness absences do not count towards the overall sickness absence for an individual. Moreover, a flexible sickness absence policy that focuses on supporting staff rather than punishing them, may also help in limiting presenteeism. Ensuring that the sickness absence policy reflects the role that the ambulance service play should be a key priority for the ambulance service to further support their staff.

A key finding of the systematic review was that two effective sickness absence interventions included components of exercise (e.g. Tai Chi, walking and cardiovascular exercise). Overall, it was suggested that increasing exercise could be a crucial component in improving sickness absence. As previously discussed, there is mixed evidence as to the direct effectiveness of exercise on sickness absence, with some researchers arguing it is able to reduce and prevent sickness absence (Amlani & Munir, 2014; Storm et al., 2016) whereas others state there is a lack of evidence for its effectiveness (Odeen et al., 2013). Nevertheless, it may be beneficial to increase the opportunity for ambulance staff to engage in exercise, which was discussed by participants in the qualitative phase.

To maintain a good level of health in the role, the ambulance service could offer staff incentives. For example, participants discussed incentives to engage in exercise, such as a gym membership being offered to staff. Moreover, a more proactive rather than reactive approach at improving sickness absence is required by utilising health screenings to identify employees with developing health conditions or screen employees who are at risk of sickness absence. For example, employees could have regular health screenings that check blood pressure, eyesight and also assist with maintaining vaccinations. Additionally, the service could also screen employees on their risk of sickness absence using some of the factors highlighted within this research.

Duijts et al. (2006) argued that a sickness absence prediction instrument could be utilised as a way to proactively establish whether an individual will engage in sickness absence. As highlighted in Chapter 2, section 2.3, previous sickness absence spells are associated with future episodes of sickness absence (Hultin et al., 2012; Laaksonen et al., 2013). Using this approach, Kant et al. (2009) developed a sickness absence screening tool called Balansmeter, which measures an individual's working environment, physical, mental health and previous sickness absence. This tool could also include measures of the individual's social environment, such as social support from colleagues, management, family and friends. This could be utilised within the ambulance service to identify vulnerable employees and provide early interventions in order to maintain their wellbeing.

With regards to developing appropriate coping mechanisms to cope with work-related stress, the ambulance service should implement training programmes for individuals to help them effectively cope with stress. Arguably, one place in which this could take place is during paramedic education, where students are being educated in clinical skills. In addition, staff could also be trained on how to identify the signs of stress, whilst offering advice on the most appropriate methods of coping.

8.5 Recommendations for future research

Despite research in study 2 providing a novel insight into sickness absence in the ambulance service, there are a variety of questions that remain unanswered. Reflecting on the sociological perspective of sickness absence and Mechanic's (1986) process of illness behaviour, this research did not provide any evidence for whether individuals are concerned with their health. For example, whether participants engaged in any ways to prevent illness or promote recovery. It became apparent in the qualitative interviews that some participants had accessed counselling however, the extent to which this impacted their sickness absence is unknown.

Previous research has highlighted a strong link between health and sickness absence (e.g. Alexanderson, 1998). However, the extent to which chronic conditions influence sickness absence is an area that requires further research. Despite health conditions being measured as part of the research, study 2 was unable to establish whether these conditions existed prior to the job or were as a result of the job. For example, it is possible that chronic conditions such as diabetes could have been present for an individual since birth and therefore is a pre-existing health condition to the job. On the other hand, emotional problems may have arisen due to the demanding nature of the ambulance role. Furthermore, the age of participants in study 2 ranged from 24 to 62 years of age, meaning that for older participants it may be difficult to determine whether health conditions were pre-existing to joining the service.

If health conditions were present in individuals either pre-existing to the job or those that developed through the job, the stress of being diagnosed and treated for certain health conditions may have added to the stress that participants were experiencing. For example, there were some participants within the sample who were being treated for cancer, which may have increased the level of stress they were experiencing. Therefore, future research investigating stress and sickness absence should also take into consideration the impact of potential illness stressors on the overall stress experienced.

With regards to investigating stress, this thesis focused mainly on the negative consequences of stress. However, research has argued there may be certain stressors that have a positive effect on an individual. For example, Widmer et al. (2012) discussed the challenge-hinderance model, which classifies stressors as either a challenge (which may have a positive effect on the individual) and hinderance stressors (which interfere with the individual). There is a potential for future research to investigate these two classifications of stressors and the impact they have on sickness absence. Moreover, it would be interesting for research to also focus on the positive aspects of work stress and their potential for individual gain.

Within the current study, management employees (within Team Leader or Operations Management roles) had, on average, a higher number of shifts absent compared to other employees such as Paramedics and Ambulance Technicians. However, this thesis has not been able to provide any evidence to suggest why this is the case. Therefore, future studies should aim to investigate why management employees have higher levels of sickness absence in this population compared to operational employees.

Moreover, the qualitative phase found that participants had a negative perception of sickness absence, but the research could not address whether attitudes towards sickness absence influenced their decision to be absent from work. The qualitative phase demonstrated that there may be more of a decision-making element to sickness absence and may potentially lie in intrinsic and extrinsic motivations, as outlined in the withdrawal hypothesis (Schaufeli et al., 2009). Therefore, future research would benefit from investigating this association between attitudes, decision-making, motivation and sickness absence behaviour. This is because there is a potential for attitudes to be changed to influence whether an individual engages in sickness absence or presenteeism.

Further research could also focus on determining the extent to which presenteeism occurs in the ambulance service. Participants in the qualitative phase discussed their preference for attending work when sick due to the fear of repercussions and feeling guilty. Therefore, further research in this area would be beneficial in establishing how and why presenteeism is used and whether it presents an increased risk to health compared to sickness absence.

With regards to the analysis of the data within this study, future research could explore alternative methods of quantitative analysis. The data within this study was analysed using negative binomial regression due to the overdispersion of zero values within the dataset. This allowed for adjustment variables to be included. However, alternative methods of data analysis could be used to assist in controlling for confounding variables. For example, propensity score

matching (PSM) is a statistical method that helps control confounding variables by mimicking the characteristics of a randomised control trial (Rosenbaum & Rubin, 1983). PSM allows participants characteristics to be matched on their propensity score, for example sex, age and job role are the same. Methods of PSM vary but commonly include the use of logistic regression (Austin, 2011). The outcomes of PSM for binomial data includes relative risk ratios, for example, the probability of sickness absence occurring in the group exposed to stress (e.g. high levels of stress) compared to a non-exposed group (e.g. low levels of stress) (Sedgwick & Marston, 2010). Despite the potential for this approach to offer potentially more control over confounding variables, there are several problems with PSM. For example, King and Nielsen (2019) suggest that it is often inefficiently executed in practice, increases the chances of researcher bias and questions whether the extent to which mimicking randomised controlled trials is effective. Nevertheless, PSM could be utilised in future research to offer additional analysis of the data.

With regards to the influence of coping styles on sickness absence, future research should focus on an in-depth examination of coping styles. In this current study, coping styles were measured using a questionnaire that asked participants how they typically respond to stress rather than over a specific period of time. Moreover, as a previous criticism of coping research, the current study also did not include the full range of coping behaviours seen within ambulance employees. For example, Kuiper (2012) highlighted that dark humour is a particularly helpful coping mechanism, but this was not specified within the coping styles questionnaire used within this study. Instead, an item about trying to keep a sense of humour was included. Therefore, future research should focus on designing an ambulance-specific coping questionnaire that includes behaviours such as dark humour whilst focusing on establishing the stability of coping styles over time through longitudinal research designs.

One argument for investigating sickness absence stemmed from the notion that the nature of the ambulance role, such as exposure to increased infection and levels of stress, were responsible for high levels of sickness absence. However, a question that remains unanswered is why sickness absence is not consistent across job roles within the service. For example, if all paramedics were exposed to similar stressors and infection rates, you would expect to see similar levels of sickness absence. However, this is not the case and there are certainly other, individual factors that influence sickness absence that go above and beyond the working environment. Future research could focus on factors such as personality, resilience and job satisfaction, which are other factors suggested to have an influence on sickness absence (Farquharson et al., 2012).

With regards to recommendations for participant sampling, further research could explore the use of random sampling to obtain a more representative sample of employees from multiple ambulance services and stations. The current research did not measure the proportion of participants that were recruited from each ambulance station. Future research could collect data from a wider range of services and specific stations with both high and low sickness absence rates. This could also allow for a potential comparison across ambulance services, which could not be provided as part of this study.

Overall, despite this research offering a novel insight into sickness absence in the ambulance service in relation to the association between stress and coping styles, there remains a variety of unanswered questions, which future research can address. Most notably, research should start to focus on developing and testing interventions that target social support and avoidance coping styles. Despite findings suggesting that support services are currently in place for ambulance staff, it is also important to evaluate these existing programmes on organisational outcomes, such as sickness absence.

8.6 Summary

The main aim of this thesis has been to investigate sickness absence in the ambulance service and its association with stress and coping styles whilst developing ways in which it can be improved. To meet the overarching aim, this thesis consisted of three research objectives.

Objective one (Chapter 3) aimed to explore interventions that have reduced sickness absence and evaluate whether these interventions could be applied to the ambulance service. The systematic review identified three interventions that demonstrated a reduction in sickness absence including an exercise-only intervention of Tai Chi (Palumbo et al., 2012), a multicomponent intervention, which included policy changes, exercise, a psychosocial and practical examination of the workplace (Roussel et al., 2015) and an influenza vaccination. Despite these interventions demonstrating effectiveness if reducing sickness absence in healthcare workers, the interventions were deemed inapplicable in their current form due to several barriers in implementation. These included possible resistance from management and staff to implement interventions, a lack of information regarding the cost-effectiveness of the interventions, no consideration of the potential harms in addition to difficulties with the location and timing of interventions for ambulance staff. Nevertheless, the measurement of sickness absence used within these studies were highlighted as a major limitation of this review. Therefore, a novel sickness absence measurement of shifts was utilised throughout the remainder of the thesis.

Objective two (Chapter 6) aimed to investigate the extent to which stress and coping styles were associated with sickness absence in addition to exploring employees' reasons, perceptions and experiences of sickness absence. Results suggested that participants with one unit decrease in social support were 2.64 times more likely to have a shift absent, which was statistically significant. Moreover, participants with avoidance coping styles were 4.83 times more likely to have a shift absent, compared to participants with a rational coping style, which was statistically significant. Participants also reported several reasons for sickness absence, that went beyond the initial definition of sickness absence being a leave of work due to illness, injury or accident. Participants reported that they engaged in sickness absence to ensure physical and psychological wellbeing, when they were feeling run down and to protect others from becoming ill. Participants had a negative perception of sickness absence but generally accepted that it occurred within the working environment. However, participants perceived that the sickness absence policy was strict and unfair. Participants' experiences of sickness absence included using it as other types of leave, such as annual leave. Participants also noted a preference for attending work whilst sick, rather than utilising sickness absence.

The third objective was to make recommendations to improve sickness absence in the ambulance service considering the evidence from study 1 and study 2. The main recommendations included improving overall health rather than sickness absence directly by offering health screenings and incentives to exercise. Moreover, there is an opportunity to increase the level of social support being offered to staff either through considering its access (such as offering online social support) or through the use of open-door policies and communication with management staff.

Overall, this thesis has contributed to understanding sickness absence in the ambulance service, particularly when statistics demonstrate that sickness absence remains high amongst ambulance employees compared to other occupations. The findings of this research have challenged previous theory surrounding the association between work-related stress and sickness absence, as social support was determined to be the most influential factor over workload, perceived control or responsibility (Elstad & Vabø, 2008; Thorsen et al., 2019). Therefore, it appears that social support and avoidance coping styles are the most prominent factors in relation to sickness absence in the ambulance population.

Furthermore, this thesis has also contributed to the methodology surrounding sickness absence. This thesis included a novel sickness absence measurement of shifts, which allowed for a consistent measurement to be analysed. Moreover, this thesis expanded previous works by collecting the experiences and perspectives of employees within the context of sickness

absence in their working environment. This method of data collection subsequently allowed for the employees' voice to be heard throughout the development of recommendations for improving sickness absence. Overall, this thesis has contributed to further understanding the role that stress and coping styles play in relation to sickness absence whilst presenting several recommendations for ambulance services.

References

Aasa, U., Barnekow-Bergkvist, M., Ängquist, K. A., & Brulin, C. (2005). Relationships between work-related factors and disorders in the neck-shoulder and low-back region among female and male ambulance personnel. *Journal of Occupational Health*, *47*(6), 481–489. https://doi.org/10.1539/joh.47.481

Abdelrahman, A. M., Bingener, J., Yu, D., Lowndes, B. R., Mohamed, A., McConico, A. L., & Hallbeck, M. S. (2016). Impact of single-incision laparoscopic cholecystectomy (SILC) versus conventional laparoscopic cholecystectomy (CLC) procedures on surgeon stress and workload: A randomized controlled trial. *Surgical Endoscopy*, *30*(3), 1205–1211. https://doi.org/10.1007/s00464-015-4332-5

Abdoola, F., Flack, P. S., & Karrim, S. B. (2017). Facilitating pragmatic skills through role-play in learners with language learning disability. *The South African Journal of Communication Disorders*, *64*(1), e1–e12. https://doi.org/10.4102/sajcd.v64i1.187

AbuAlRub, R. F. (2004). Job stress, job performance, and social support among hospital nurses. *Journal of Nursing Scholarship*, *36*(1), 73–78.

Adams, K., Shakespeare-Finch, J., & Armstrong, D. (2014). An interpretative phenomenological analysis of stress and well-being in emergency medical dispatchers. *Journal of Loss and Trauma*, *20*(5), 430–448. https://doi.org/10.1080/15325024.2014.949141

Ahmed, P. I., Kolker, A., & Coelho, G. V. (1979). Towards a new definition of health: An overview. In P. I. Ahmed & G. V. Coelho (Eds.), *Towards a New Definition of Health: Psychosocial Dimensions* (pp. 7–21). Plenum.

Akobeng, A. K. (2005). Understanding randomised controlled trials. *Archives of Disease in Childhood*, *90*(8), 840. https://doi.org/10.1136/adc.2004.058222

Alexander, D. A., & Klein, S. (2001). Ambulance personnel and critical incidents: Impact of accident and emergency work on mental health and emotional well-being. *British Journal of Psychiatry*, *178*, 76–81.

Alexanderson, K. (1998). Sickness absence: A review of performed studies with focused on levels of exposures and theories utilized. *Scandinavian Journal of Social Medicine*, *26*(4), 241–249.

Alexis, O. (2011). The management of sickness absence in the NHS. *British Journal of Nursing*, *20*(22), 1437–1442.

Allebeck, P., & Mastekaasa, A. (2004). Chapter 3 Causes of sickness absence: Research approaches and explanatory models. *Scandinavian Journal of Public Health Supplement*, *63*, 36–43. https://doi.org/10.1080/14034950410021835

Allott, K. A., Rapado-Castro, M., Proffitt, T.-M., Bendall, S., Garner, B., Butselaar, F., Markulev, C., Phassouliotis, C., McGorry, P. D., Wood, S. J., Cotton, S. M., & Phillips, L. J. (2015). The impact of neuropsychological functioning and coping style on perceived stress in individuals with first-episode psychosis and healthy controls. *Psychiatry Research*, *226*(1), 128–135. https://doi.org/10.1016/j.psychres.2014.12.032

Althubaiti, A. (2016). Information bias in health research: Definition, pitfalls, and adjustment methods. *Journal of Multidisciplinary Healthcare*, *9*, 211–217. https://doi.org/10.2147/JMDH.S104807

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders, (5th Ed.)*. https://www.psychiatry.org/psychiatrists/practice/dsm

Amlani, N., & Munir, F. (2014). Does physical activity have an impact on sickness absence? A review. *Sports Medicine*, *44*(7), 887–907. https://doi.org/10.1007/s40279-014-0171-0

Andela, M., & van der Doef, M. (2018). A comprehensive assessment of the person–environment fit dimensions and their relationships with work-related outcomes. *Journal of Career Development*, *46*(5), 567–582. https://doi.org/10.1177/0894845318789512

Anderson, D., Feldblum, S., Modlin, C., Schlrmacher, D., Schlrmacher, E., & Thandi, N. (2007). *A practitioner's guide to generalized linear models: A foundation for theory, interpretation and application*. A Practitioner's Guide to Generalized Linear Models: A Foundation for Theory, Interpretation and Application. https://www.casact.org/pubs/dpp/dpp04/04dpp1.pdf

Anstey, S., Tweedie, J., & Lord, B. (2016). Qualitative study of Queensland paramedics' perceived influences on their food and meal choices during shift work. *Nutrition & Dietetics*, *73*(1), 43–49. https://doi.org/10.1111/1747-0080.12237

Arellano, M. (2003). *Panel data econometrics*. Oxford University Press.

Arends, I., van der Klink, J. J. L., van Rhenen, W., de Boer, M. R., & Bültmann, U. (2014). Prevention of recurrent sickness absence in workers with common mental disorders: Results of a cluster-randomised controlled trial. *Occupational and Environmental Medicine*, *71*(1), 21. https://doi.org/10.1136/oemed-2013-101412

Ariansen, A. M. S. (2014). Age, occupational class and sickness absence during pregnancy: A retrospective analysis study of the Norwegian population registry. *BMJ Open*, *4*(5), 1–9. https://doi.org/10.1136/bmjopen-2013-004381

Armstrong, D., Shakespeare-Finch, J., & Shochet, I. (2014). Predicting post-traumatic growth and post-traumatic stress in firefighters. *Australian Journal of Psychology*, *66*(1), 38–46. https://doi.org/10.1111/ajpy.12032

Arnup, J., & Bowles, T. (2016). Should I stay or should I go? Resilience as a protective factor for teachers' intention to leave the teaching profession. *Australian Journal of Education*, *60*(3), 229–244. https://doi.org/10.1177/0004944116667620

Arvidson, E., Sjörs, A., & Jonsdottir, I. H. (2017). Perceived stress and physiological reactions to repeated TSST in healthy individuals. *Psychoneuroendocrinology*, *83*, 15. https://doi.org/10.1016/j.psyneuen.2017.07.278

Association of Ambulance Chief Executives. (2011). *Measuring patient outcomes: Clinical quality indicators*. https://aace.org.uk/uk-ambulance-service/national-performance/

Austin, P. C. (2011). An introduction to propensity score methods for reducing the effects of confounding in observational studies. *Multivariate Behavioral Research*, *46*(3), 399–424. https://doi.org/10.1080/00273171.2011.568786

Avraham, N., Goldblatt, H., & Yafe, E. (2014). Paramedics' experiences and coping strategies when encountering critical incidents. *Qualitative Health Research*, *24*(2), 194–208. https://doi.org/10.1177/1049732313519867

Azorín, J. M., & Cameron, R. (2010). The application of mixed methods in organisational research: A literature review. *The Electronic Journal of Business Research Methods*, *8*(2), 95–100.

Backer, E., & Schänzel, H. (2013). Family Holidays—Vacation or Obli-cation? *Tourism Recreation Research*, *38*(2), 159–173. https://doi.org/10.1080/02508281.2013.11081742

Baird, B., & McKenna, H. (2019). *Brexit: The implications for health and social care*. https://www.kingsfund.org.uk/publications/articles/brexit-implications-health-social-care

Baker, P. R. A., Francis, D. P., Shipp, J. J., Wellings, S. H., & Priest, N. (2011). Assessment of applicability and transferability of evidence-based antenatal interventions to the Australian indigenous setting. *Health Promotion International*, *27*(2), 208–219. https://doi.org/10.1093/heapro/dar032

Baker, R., Coenen, P., Howie, E., Williamson, A., & Straker, L. (2018). The short term musculoskeletal and cognitive effects of prolonged sitting during office computer work. *International Journal of Environmental Research and Public Health*, *15*(8), 1678. https://doi.org/10.3390/ijerph15081678

Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, *22*(3), 309–328. https://doi.org/10.1108/02683940710733115

Balk, Y. A., de Jonge, J., Geurts, S. A. E., & Oerlemans, W. G. M. (2019). Antecedents and consequences of perceived autonomy support in elite sport: A diary study linking coaches' off-job recovery and athletes' performance satisfaction. *Psychology of Sport and Exercise*, *44*, 26–34. https://doi.org/10.1016/j.psychsport.2019.04.020

Barck-Holst, P., Nilsonne, Å., Åkerstedt, T., & Hellgren, C. (2017). Reduced working hours and stress in the Swedish social services: A longitudinal study. *International Social Work*, *60*(4), 897–913. https://doi.org/10.1177/0020872815580045

Barnett, M. D., Martin, K. J., & Garza, C. J. (2019). Satisfaction with work–wamily balance mediates the relationship between workplace social support and depression among hospice nurses. *Journal of Nursing Scholarship*, *51*(2), 187–194. https://doi.org/10.1111/jnu.12451

Barron, T., Fivaz, C., & Overton, J. (2015). Emergency medical dispatch effectiveness: A new utstein type analytical tool for studying the specific stages in the call taking process. *Emergency Medicine Journal*, *32*(6), e12–e13. https://doi.org/10.1136/emermed-2015-204980.3

Baseman, J., Revere, D., Painter, I., Stangenes, S., Lilly, M., Beaton, R., Calhoun, R., & Meischke, H. (2018). Impact of new technologies on stress, attrition and well-being in emergency call centers: The NextGeneration 9–1-1 study protocol. *BMC Public Health*, *18*(1), 597. https://doi.org/10.1186/s12889-018-5510-x

Bedini, S., Braun, F., Weibel, L., Aussedat, M., Pereira, B., & Dutheil, F. (2017). Stress and salivary cortisol in emergency medical dispatchers: A randomized shifts control trial. *PloS One*, *12*(5), e0177094–e0177094. https://doi.org/10.1371/journal.pone.0177094

Bennett, P. (2004). Levels of mental health problems among UK emergency ambulance workers. *Emergency Medicine Journal*, *21*(2), 235–236. https://doi.org/10.1136/emj.2003.005645

Benoot, C., Hannes, K., & Bilsen, J. (2016). The use of purposeful sampling in a qualitative evidence synthesis: A worked example on sexual adjustment to a cancer trajectory. *BMC Medical Research Methodology*, *16*(1), 21. https://doi.org/10.1186/s12874-016-0114-6

Ben-Zur, H., & Michael, K. (2007). Burnout, social support, and coping at work among social workers, psychologists, and nurses. *Social Work in Health Care*, *45*(4), 63–82. https://doi.org/10.1300/J010v45n04_04

Berkowitz, S. A., Hulberg, A. C., Hong, C., Stowell, B. J., Tirozzi, K. J., Traore, C. Y., & Atlas, S. J. (2016). Addressing basic resource needs to improve primary care quality: A community collaboration programme. *BMJ Quality & Safety*, *25*(3), 164. https://doi.org/10.1136/bmjqs-2015-004521

Bernstein, I., & Rowe, N. (2001). *Statistical Data Analysis Using Your Personal Computer*. SAGE Publications. https://methods.sagepub.com/book/statistical-data-analysis-using-your-personal-computer

Best, H., & Wolf, C. (2019). *The SAGE handbook of regression analysis and causal inference*. SAGE Publications. https://doi.org/10.4135/9781446288146

Betlehem, J., Horvath, A., Jeges, S., Gondocs, Z., Nemeth, T., Kukla, A., & Olah, A. (2013). How healthy are ambulance personnel in central europe? *Evaluation & the Health Professions*, *37*(3), 394–406. https://doi.org/10.1177/0163278712472501

Batterham, A. M., & Atkinson, G. (2005). How big does my sample need to be? A primer on the murky world of sample size estimation. *Physical Therapy in Sport*, *6*(1), 153-163. https://doi.org/10.1016/j.ptsp.2005.05.004

Bevan, S., & Hayday, S. (2001). *Costing sickness absence in the UK* (No. 382; pp. 1–60). The Institute for Employment Studies.

Biering, K., Lund, T., Andersen, J. H., & Hjollund, N. H. (2015). Effect of psychosocial work environment on sickness absence among patients treated for ischemic heart disease. *Journal of Occupational Rehabilitation*, *25*(4), 776–782. https://doi.org/10.1007/s10926-015-9587-0

Bledsoe, B. E. (2003). Critical incident stress management (CISM): Benefit or risk for emergency services ? *Prehospital Emergency Care*, *7*(2), 272–279. https://doi.org/10.1080/10903120390936941

Bohström, D., Carlström, E., & Sjöström, N. (2017). Managing stress in prehospital care: Strategies used by ambulance nurses. *International Emergency Nursing*, *32*, 28–33. https://doi.org/10.1016/j.ienj.2016.08.004

Boland, L. L., Kinzy, T. G., Myers, R. N., Fernstrom, K. M., Kamrud, J. W., Mink, P. J., & Stevens, A. C. (2018). Burnout and exposure to critical incidents in a cohort of emergency medical services workers from Minnesota. *The Western Journal of Emergency Medicine*, *19*(6), 987–995. https://doi.org/10.5811/westjem.8.39034

Bollen, K. A., & Jackman, R. W. (1985). Regression diagnostics: An expository treatment of outliers and influential cases. *Sociological Methods & Research*, *13*(4), 510–542. https://doi.org/10.1177/0049124185013004004

Booker, M. J., Simmonds, R. L., & Purdy, S. (2014). Patients who call emergency ambulances for primary care problems: A qualitative study of the decision-making process. *Emergency Medicine Journal*, *31*(6), 448. https://doi.org/10.1136/emermed-2012-202124

Boorman, S. (2009). *NHS health and well-being: Final report* (No. 299039; pp. 1–37). http://www.healthyregions.eu/uk/Boorman%20NHS%20HWB%20Final%20Report%20Nov%2009.pdf

Bounds, R. (2006). Factors affective perceived stress in pre-hospital emergency medical services. *Californian Journal of Health Promotion*, *4*(2), 113–131. https://doi.org/10.32398/cjhp.v4i2.1937

Box, G. E. P., & Cox, D. R. (1964). An analysis of transformations. *Journal of the Royal Statistical Society: Series B (Methodological)*, *26*(2), 211–243. https://doi.org/10.1111/j.2517-6161.1964.tb00553.x

Bozovic, D., Racic, M., & Ivkovic, N. (2013). Salivary cortisol levels as a biological marker of stress eeaction. *Medical Archives*, *67*(5), 374. https://doi.org/10.5455/medarh.2013.67.374-377

Bracken, M. B. (2009). Why animal studies are often poor predictors of human reactions to exposure. *Journal of the Royal Society of Medicine*, *102*(3), 120–122. PMC. https://doi.org/10.1258/jrsm.2008.08k033

Brantly, P. J., Waggoner, C. D., Jones, G. N., & Rappaport, N. B. (1987). A Daily Stress Inventory: Development, reliability, and validity. *Journal of Behavioral Medicine*, *10*(1), 61–74.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101.

British Psychological Society. (2014). *Code of Human Research Ethics*.

British Psychological Society. (2018). *Code of Ethics and Conduct*.

Brousse, G., Arnaud, B., Roger, J. D., Geneste, J., Bourguet, D., Zaplana, F., Blanc, O., Schmidt, J., & Jehel, L. (2011). Management of traumatic events: Influence of emotion-centered coping strategies on the occurrence of dissociation and post-traumatic stress disorder. *Neuropsychiatric Disease and Treatment*, *7*, 127–133. https://doi.org/10.2147/NDT.S17130

Brox, J. I., & Frøystein, O. (2005). Health-related quality of life and sickness absence in community nursing home employees: Randomized controlled trial of physical exercise. *Occupational Medicine*, *55*(7), 558–563. https://doi.org/10.1093/occmed/kqi153

Bruhn, J. G. (2001). Ethical issues in intervention outcomes. *Family & Community Health*, *23*(4), 24–35.

Brydges, M., Denton, M., & Agarwal, G. (2016). The CHAP-EMS health promotion program: A qualitative study on participants' views of the role of paramedics. *BMC Health Services Research*, *16*(1), 435–435. https://doi.org/10.1186/s12913-016-1687-9

Burnham, J. C. (2012). The death of the sick role. *Social History of Medicine*, *25*(4), 761–776. https://doi.org/10.1093/shm/hks018

Cable, D. M., & DeRue, D. S. (2002). The convergent and discriminant validity of subjective fit perceptions. *Journal of Applied Psychology*, *87*(5), 875–884. https://doi.org/10.1037/0021-9010.87.5.875

Caldwell, S. D., Herold, D. M., & Fedor, D. B. (2004). Toward an understanding of the relationships among organizational change, individual differences, and changes in Person-Environment Fit: A cross-level study. *Journal of Applied Psychology*, *89*(5), 868–882. https://doi.org/10.1037/0021-9010.89.5.868

Calnan, M., Wadsworth, E., May, M., Smith, A., & Wainwright, D. (2004). Job strain, effort—Reward imbalance, and stress at work: Competing or complementary models? *Scandinavian Journal of Public Health*, *32*(2), 84–93. https://doi.org/10.1080/14034940310001668

Cameron, R. (2011). Mixed methods research: The five Ps framework. *The Electronic Journal of Business Research Methods*, *9*(2), 96–108.

Can, S. H., & Hendy, H. M. (2014). Police stressors, negative outcomes associated with them and coping mechanisms that may reduce these associations. *The Police Journal*, *87*(3), 167–177. https://doi.org/10.1350/pojo.2014.87.3.676

Caroline, N. (2008). *Emergency care on the streets*. Jones & Bartlett Publishers International.

Carter, P. (2018). Operational productivity and performance in English NHS Ambulance Trusts: Unwarranted variations. https://www.england.nhs.uk/wp-content/uploads/2019/09/Operational_productivity_and_performance_NHS_Ambulance_Trusts_final.pdf

Carver, C. S., & Scheier, M. F. (1994). Situational coping and coping dispositions in a stressful transaction. *Journal of Personality and Social Psychology*, *66*(1), 184–195. https://doi.org/10.1037/0022-3514.66.1.184

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, *65*, 267–283. https://doi.org/10.1037/0022-3514.56.2.267

Casini, A., Godin, I., Clays, E., & Kittel, F. (2013). Gender difference in sickness absence from work: A multiple mediation analysis of psychosocial factors. *European Journal of Public Health*, *23*(4), 635–642.

Castleberry, A., & Nolen, A. (2018). Thematic analysis of qualitative research data: Is it as easy as it sounds? *Currents in Pharmacy Teaching and Learning*, *10*(6), 807–815. https://doi.org/10.1016/j.cptl.2018.03.019

Chadwick-Jones, J. K., Nicholson, N., & Brown, C. (1982). *Social psychology of absenteeism*. Greenwood Publishing Group.

Chang, E. M., Daly, J., Hancock, K. M., Bidewell, J. W., Johnson, A., Lambert, V. A., & Lambert, C. E. (2006). The relationships among workplace stressors, coping methods, demographic characteristics, and health in Australian nurses. *Journal of Professional Nursing*, *22*(1), 30–38. https://doi.org/10.1016/j.profnurs.2005.12.002

Chao, R. C. (2011). Managing stress and maintaining well-being: Social support, problem-focused coping and avoidant coping. *Journal of Counselling and Development*, *89*(3), 338–348. https://doi.org/10.1002/j.1556-6678.2011.tb00098.x

Charman, S. (2013). Sharing a laugh: The role of humour in relationships between police officers and ambulance staff. *International Journal of Sociology and Social Policy*, *33*(3/4), 152–166. https://doi.org/10.1108/01443331311308212

Chen, Y., Peng, Y., Xu, H., & O'Brien, W. H. (2017). Age differences in stress and coping: Problem-focused strategies mediate the relationship between age and positive affect. *The International Journal of Aging and Human Development*, *86*(4), 347–363. https://doi.org/10.1177/0091415017720890

Christ, T. W. (2014). Scientific-based research and randomized controlled trials, the "gold" standard? Alternative paradigms and mixed methodologies. *Qualitative Inquiry*, *20*(1), 72–80. https://doi.org/10.1177/1077800413508523

Christopher, S. (2015). An introduction to black humour as a coping mechanism for student paramedics. *Journal of Paramedic Practice*, *7*(12), 610–617. https://doi.org/10.12968/jpar.2015.7.12.610

Chung, E. K., Jung, Y., & Sohn, Y. W. (2017). A moderated mediation model of job stress, job satisfaction, and turnover intention for airport security screeners. *Safety Science*, *98*, 89–97. https://doi.org/10.1016/j.ssci.2017.06.005

Chartered Institute of Personnel and Development [CIPD]. (2020). Health and wellbeing at work. Chartered Institute of Personnel and Development. https://www.cipd.co.uk/Images/health-and-well-being-2020-report_tcm18-73967.pdf

Clasen, J. (2017). Income security during sickness absence: What do British middle classes do? *Social Policy & Administration*, *51*(7), 1101–1118. https://doi.org/10.1111/spol.12218

Clohessy, S., & Ehlers, A. (1999). PTSD symptoms, response to intrusive memories and coping in ambulance service workers. *British Journal of Clinical Psychology*, *38*(3), 251–265. https://doi.org/10.1348/014466599162836

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, *38*(5). https://doi.org/10.1097/00006842-197609000-00003

Cochrane Collaboration. (2019). *Cochrane Handbook for Systematic Reviews of Interventions* (J. P. T. Higgins, J. Thomas, J. Chandler, M. Cumpston, T. Li, M. J. Page, & V. A. Welch, Eds. 2nd Edition). John Wiley & Sons.

Coffey, B., MacPhee, R., Socha, D., & Fischer, S. L. (2016). A physical demands description of paramedic work in Canada. *International Journal of Industrial Ergonomics*, *53*, 355–362. https://doi.org/10.1016/j.ergon.2016.04.005

Cohen, F., & Lazarus, R. S. (1979). Coping with the stresses of illness. In G. C. Stone, F. Cohen, & N. E. Adler (Eds.), *Health Psychology: A handbook*. Jossey-Bass.

Cohen, R. A. (2011). Yerkes–Dodson Law. In J. S. Kreutzer, J. DeLuca, & B. Caplan (Eds.), *Encyclopedia of Clinical Neuropsychology* (pp. 2737–2738). Springer. https://doi.org/10.1007/978-0-387-79948-3_1340

Cohen, S., Gianaros, P. J., & Manuck, S. B. (1991). A stage model of stress and disease. *Perspectives on Psychological Science*, *11*(4), 456–463. https://doi.org/10.1177/1745691616646305

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*(4), 385–396. https://doi.org/10.2307/2136404

Cook, R. D., & Weisberg, S. (1999). *Applied regression including computing and graphics*. Wiley.

Coppens, C. M., de Boer, S. F., & Koolhaas, J. M. (2010). Coping styles and behavioural flexibility: Towards underlying mechanisms. *Philosophical Transactions of The Royal Society*, *365*, 4021–4028. https://doi.org/10.1098/rstb.2010.0217

Coster, J. E., Irving, A. D., Turner, J. K., Phung, V.-H., & Siriwardena, A. N. (2018). Prioritizing novel and existing ambulance performance measures through expert and lay consensus: A three-stage multimethod consensus study. *Health Expectations: An International Journal of Public Participation in Health Care and Health Policy*, *21*(1), 249–260. https://doi.org/10.1111/hex.12610

Coxon, A., Cropley, M., Schofield, P., Start, K., Horsfield, C., & Quinn, T. (2016). 'You're never making just one decision': Exploring the lived experiences of ambulance Emergency Operations Centre personnel. *Emergency Medicine Journal*, *33*(9), 645. https://doi.org/10.1136/emermed-2015-204841

Crabtree, B., & Miller, W. (1999). Using codes and code manuals: A template for organizing style of interpretation. In B. Crabtree & W. Miller (Eds.), *Doing Qualitative Research* (2nd Edition, pp. 163–178). SAGE.

Craggs, B., & Blaber, A. (2008). Consideration of history. In A. Y. Baber (Ed.), *Foundations for paramedic practice: A theoretical perspective* (pp. 3–12). Open University Press.

Craske, M. G., & Stein, M. B. (2016). Anxiety. *The Lancet*, *388*(10063), 3048–3059. https://doi.org/10.1016/S0140-6736(16)30381-6

Creswell, J. W., & Clark, V. L. P. (2011). *Designing and conducting mixed methods research*. SAGE Publications. https://books.google.co.uk/books?id=YcdlPWPJRBcC

Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2003). *Advanced Mixed Methods Research Designs*. Sage Publications.

Crocetti, E. (2016). Systematic reviews with meta-analysis: Why, when, and how? *Emerging Adulthood*, *4*(1), 3–18. https://doi.org/10.1177/2167696815617076

Cullati, S., Cheval, B., Schmidt, R. E., Agoritsas, T., Chopard, P., & Courvoisier, D. S. (2017). Self-rated health and sick leave among nurses and physicians: The role of regret and coping strategies in difficult care-related situations. *Frontiers in Psychology*, *8*, 623. https://doi.org/10.3389/fpsyg.2017.00623

Cutcliffe, J. R., & McKenna, H. P. (1999). Establishing the credibility of qualitative research findings: The plot thickens. *Journal of Advanced Nursing*, *30*(2), 374–380. https://doi.org/10.1046/j.1365-2648.1999.01090.x

Cutrona, C. E., & Suhr, J. A. (1992). Controllability of stressful events and satisfaction with spouse support behaviors. *Communication Research*, *19*(2), 154–174. https://doi.org/10.1177/009365092019002002

Daniels, K., & Guppy, A. (1994). Occupational stress, social support, job control, and psychological well-being. *Human Relations*, *47*(12), 1523.

Darrow, J. D., & Behrend, T. S. (2017). Person-environment fit is a formative construct. *Journal of Vocational Behavior*, *103*, 117–131. https://doi.org/10.1016/j.jvb.2017.08.007

Davenport, E. C., Davison, M. L., Liou, P.-Y., & Love, Q. U. (2015). Reliability, dimensionality, and internal consistency as defined by Cronbach: Distinct albeit related concepts. *Educational Measurement: Issues and Practice*, *34*(4), 4–9. https://doi.org/10.1111/emip.12095

de Boer, J., van Rikxoort, S., Bakker, A. B., & Smit, B. J. (2014). Critical incidents among intensive care unit nurses and their need for support: Explorative interviews. *Nursing in Critical Care*, *19*(4), 166–174. https://doi.org/10.1111/nicc.12020

de Jonge, J., & Dormann, C. (2017). Why is my job so stressful? Characteristics, processes and models of stress at work. In *An Introduction to Work and Organizational Psychology* (pp. 80–101). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781119168058.ch5

de Rooij, B. H., Thong, M. S. Y., van Roij, J., Bonhof, C. S., Husson, O., & Ezendam, N. P. M. (2018). Optimistic, realistic, and pessimistic illness perceptions; quality of life; and survival among 2457 cancer survivors: The population-based PROFILES registry. *Cancer*, *124*(17), 3609–3617. https://doi.org/10.1002/cncr.31634

De Simone Silvia, Cicotto Gianfranco, Pinna Roberta, & Giustiniano Luca. (2016). Engaging public servants: Public service motivation, work engagement and work-related stress. *Management Decision*, *54*(7), 1569–1594. https://doi.org/10.1108/MD-02-2016-0072

Declercq, F., Meganck, R., Deheegher, J., & Van Hoorde, H. (2011). Frequency of and subjective response to critical incidents in the prediction of PTSD in emergency personnel. *Journal of Traumatic Stress*, *24*(1), 133–136. https://doi.org/10.1002/jts.20609

Delaney, K. R. (2006). Learning to observe relationships and coping. *Journal of Child and Adolescent Psychiatric Nursing*, *19*(4), 194–202. https://doi.org/10.1111/j.1744-6171.2006.00071.x

Data Protection Act, 1 (2018). http://www.legislation.gov.uk/ukpga/2018/12/pdfs/ukpga_20180012_en.pdf

Dewey, J. (2008). Experience and nature. In J. Boydston & S. Hook (Eds.), *The later works of John Dewey, 1925-1953*. Southern Illinois University Press.

Dhabhar, F. S. (2009). A hassle a day may keep the pathogens away: The fight-or-flight stress response and the augmentation of immune function. *Integrative and Comparative Biology*, *49*(3), 215–236. https://doi.org/10.1093/icb/icp045

DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, *40*(4), 314–321. https://doi.org/10.1111/j.1365-2929.2006.02418.x

Dillon, D. R., O'Brien, D. G., & Heilman, E. E. (2000). Literacy research in the next millennium: From paradigms to pragmatism and practicality. *Reading Research Quarterly*, *35*(1), 10–26. https://doi.org/10.1598/RRQ.35.1.2

Dixit, S. K., & Sambasivan, M. (2018). A review of the Australian healthcare system: A policy perspective. *SAGE Open Medicine*, *6*, 1–14. https://doi.org/10.1177/2050312118769211

Dodd, G. (2017). PTSD, available support and development of services in the UK Ambulance Service. *Journal of Paramedic Practice*, *9*(6), 258–263. https://doi.org/10.12968/jpar.2017.9.6.258

Dolan, C. A., & Ender, M. G. (2008). The coping paradox: Work, stress, and coping in the US Army. *Military Psychology*, *20*(3), 151–169. https://doi.org/10.1080/08995600802115987

Dolan, G., Strodl, E., & Hamernik, E. (2012). Why renal nurses cope so well with their workplace stressors. *Journal of Renal Care*, *38*(4), 222–232. https://doi.org/10.1111/j.1755-6686.2012.00319.x

Donaldson, S. I., & Grant-Vallone, E. J. (2002). Understanding self-report bias in organizational behavior research. *Journal of Business and Psychology*, *17*(2), 245. https://doi.org/10.1023/A:1019637632584

Donnelly, E. A. (2012). Work-related stress and posttraumatic stress in emergency medical services. *Prehospital Emergency Care*, *16*(1), 76–85. https://doi.org/10.3109/10903127.2011.621044

Donnelly, E. A., Bradford, P., Davis, M., Hedges, C., & Klingel, M. (2016). Predictors of posttraumatic stress and preferred sources of social support among Canadian paramedics. *Journal of the Canadian Association of Emergency Physicians*, *18*(3), 205–212. https://doi.org/10.1017/cem.2015.92

Dooley, L. N., Slavich, G. M., Moreno, P. I., & Bower, J. E. (2017). Strength through adversity: Moderate lifetime stress exposure is associated with psychological resilience in breast cancer survivors. *Stress and Health*, *33*(5), 549–557. https://doi.org/10.1002/smi.2739

Doran, D., Massari, L., Calzarossa, M. C., Li, Y., Tessera, D., & Zhang, J. (2019). User interactions and behaviors in a large-scale online emotional support service. *Social Network Analysis and Mining*, *9*(1), 36. https://doi.org/10.1007/s13278-019-0581-y

Dowling, P. (2009). Technical tutorial: Bradford points. *PrintWeek*, 36.

Duijts, S. F. A., Kant, I. J., Landeweerd, J. A., & Swaen, G. M. H. (2006). Prediction of sickness absence: Development of a screening instrument. *Occupational and Environmental Medicine*, *63*(8), 564. https://doi.org/10.1136/oem.2005.024521

Dunteman, G., & Ho, M. (2006). *An Introduction to Generalized Linear Models*. https://doi.org/10.4135/9781412983273

Durham, M., Faulkner, M., & Deakin, C. (2016). Targeted response? An exploration of why ambulance services find government targets particularly challenging. *British Medical Bulletin*, *120*(1), 35–42. https://doi.org/10.1093/bmb/ldw047

East Midlands Ambulance Service. (2019). *Sickness absence data: Causes of sickness absence since 2016*.

East of England Ambulance Service NHS Trust. (2015). *Occupational health and wellbeing policy*. 1–19.

Eddy, P., Heckenberg, R., Wertheim, E. H., Kent, S., & Wright, B. J. (2016). A systematic review and meta-analysis of the effort-reward imbalance model of workplace stress with indicators of immune function. *Journal of Psychosomatic Research*, *91*, 1–8. https://doi.org/10.1016/j.jpsychores.2016.10.003

Eden, D. (1982). Critical job events, acute stress, and strain: A multiple interrupted time series. *Organisational Behavior and Human Performance*, *30*(3), 312–329. https://doi.org/10.1016/0030-5073(82)90223-9

Elklit, A. (1996). Coping styles questionnaire: A contribution to the validation of a scale for measuring coping strategies. *Personality and Individual Differences*, *21*, 809–812.

Elstad, J. I., & Vabø, M. (2008). Job stress, sickness absence and sickness presenteeism in Nordic elderly care. *Scandinavian Journal of Public Health*, *36*(5), 467–474. https://doi.org/10.1177/1403494808089557

Elwood, S. A., & Martin, D. G. (2000). "Placing" interviews: Location and dcales of power in qualitative research. *The Professional Geographer*, *52*(4), 649–657. https://doi.org/10.1111/0033-0124.00253

Endler, N. S. (1997). Stress, anxiety and coping: The multidimensional interaction model. *Canadian Psychology*, *38*(3), 136–153. https://doi.org/10.1037/0708-5591.38.3.136

Endler, N. S., & Parker, J. D. (1990). Multidimensional assessment of coping: A critical evaluation. *Journal of Personality and Social Psychology*, *58*(5), 844. https://doi.org/10.1037/0022-3514.58.5.844

Ernst, A. F., & Albers, C. J. (2017). Regression assumptions in clinical psychology research practice-a systematic review of common misconceptions. *PeerJ*, *5*, e3323–e3323. PubMed. https://doi.org/10.7717/peerj.3323

Essex, B., & Benz-Scott, L. (2008). Chronic stress and associated coping strategies among volunteer EMS personnel. *Prehospital Emergency Care*, *12*, 69–75. https://doi.org/10.1080/10903120701707955

Evans, D., Chaix, B., Lobbedez, T., Verger, C., & Flahault, A. (2012). Combining directed acyclic graphs and the change-in-estimate procedure as a novel approach to adjustment-variable selection in epidemiology. *BMC Medical Research Methodology*, *12*, 156. https://doi.org/10.1186/1471-2288-12-156

Evans, S., Seidman, L. C., Tsao, J. C., Lung, K. C., Zeltzer, L. K., & Naliboff, B. D. (2013). Heart rate variability as a biomarker for autonomic nervous system response differences between children with chronic pain and healthy control children. *Journal of Pain Research*, *6*, 449–457. https://doi.org/10.2147/JPR.S43849

Faraoni, D., & Schaefer, S. T. (2016). Randomized controlled trials vs. Observational studies: Why not just live together? *BMC Anesthesiology*, *16*, 102. https://doi.org/10.1186/s12871-016-0265-3

Farquharson, B., Allan, J., Johnston, D., Johnston, M., Choudhary, C., & Jones, M. (2012). Stress amongst nurses working in a healthcare telephone-advice service: Relationship with job satisfaction, intention to leave, sickness absence, and performance. *Journal of Advanced Nursing*, *68*(7), 1624–1635. https://doi.org/10.1111/j.1365-2648.2012.06006.x

Farrants, K., Kjeldgård, L., Marklund, S., Head, J., & Alexanderson, K. (2018). Sick leave before and after the age of 65 years among those in paid work in Sweden in 2000 or 2005: A register-based cohort study. *Journal of International Medical Research*, *46*(2), 564–577. https://doi.org/10.1177/0300060517734744

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs-principles and practices. *Health Services Research*, *48*(6 Pt 2), 2134–2156. https://doi.org/10.1111/1475-6773.12117

Finkelstein, A., & Dowell, J. (1996). *A comedy of errors: The London Ambulance Service case study*. 1–3. http://www0.cs.ucl.ac.uk/staff/a.finkelstein/papers/lascase.pdf

Fischer, S. L., Sinden, K. E., & MacPhee, R. S. (2017). Identifying the critical physical demanding tasks of paramedic work: Towards the development of a physical employment standard. *Applied Ergonomics*, *65*, 233–239. https://doi.org/10.1016/j.apergo.2017.06.021

Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*, *21*(3), 219–239. https://doi.org/10.2307/2136617

Folkman, S., & Tedlie, J. M. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology*, *55*, 745–774. https://doi.org/10.1146/annurev.psych.55.090902.141456

Frazier, S. E., & Parker, S. H. (2018). Measurement of physiological responses to acute stress in multiple occupations: A systematic review and implications for front line healthcare providers. *Translational Behavioral Medicine*, *9*(1), 158–166. https://doi.org/10.1093/tbm/iby019

Fredriksson, K., Alfredsson, L., Thorbjörnsson, C. B., Punnett, L., Toomingas, A., Torgén, M., & Kilbom, A. (2000). Risk factors for neck and shoulder disorders: A nested case-control study covering a 24-year period. *American Journal of Industrial Medicine*, *38*(5), 516–528. https://doi.org/10.1002/1097-0274(200011)38:5<516::aid-ajim4>3.0.co;2-0

French, J. R. P., Rodgers, W., & Cobb, S. (1974). Adjustment as person-environment fit. In G. V. Coelho, D. A. Hamburg, & J. E. Adams (Eds.), *Coping and Adaptation*. Basic Books.

Friebel, R., Molloy, A., Leatherman, S., Dixon, J., Bauhoff, S., & Chalkidou, K. (2018). Achieving high-quality universal health coverage: A perspective from the National Health Service in England. *BMJ Global Health*, *3*(6), e000944. https://doi.org/10.1136/bmjgh-2018-000944

FTI Consulting. (2015). *Review of sickness absence: Summary of findings* (pp. 1–11).

Fujino, Y., Mizoue, T., Izumi, H., Kumashiro, M., Hasegawa, T., & Yoshimura, T. (2001). Job stress and mental health among permanenet night workers. *Journal of Occupational Health*, *43*(1), 301–306. https://doi.org/10.1539/joh.43.301

Garbarino, S., Cuomo, G., Chiorri, C., & Magnavita, N. (2013). Association of work-related stress with mental health problems in a special police force unit. *BMJ Open*, *3*(7). https://doi.org/10.1136/bmjopen-2013-002791

Gardner, H. R., Fraser, C., MacLennan, G., & Treweek, S. (2016). A protocol for a systematic review of non-randomised evaluations of strategies to improve participant recruitment to randomised controlled trials. *Systematic Reviews*, *5*, 131. https://doi.org/10.1186/s13643-016-0308-3

Garson, D. (2014). *Logistic regression: Binary and multinomial*. Staitsical Associates. http://www.statisticalassociates.com/logistic_p.pdf

Gershon, R. R. M., Barocas, B., Canton, A. N., Xianbin, L., & Vlahov, D. (2008). Mental, physical, and behavioral outcomes associated with perceived work stress in police officers. *Criminal Justice and Behavior*, *36*(3), 275–289. https://doi.org/10.1177/0093854808330015

Gevers, J., Van Erven, P., De Jonge, J., Maas, M., & De Jong, J. (2010). Effect of acute and chronic job demands on effective individual teamwork behaviour in medical

emergencies. *Journal of Advanced Nursing*, *66*(7), 1573–1583. https://doi.org/10.1111/j.1365-2648.2010.05314.x

Gianino, Maria. M., Politano, G., Scarmozzino, A., Charrier, L., Testa, M., Giacomelli, S., Benso, A., & Zotti, Carla. M. (2017). Estimation of sickness absenteeism among Italian healthcare workers during seasonal influenza epidemics. *PLoS One*, *12*(8). https://doi.org/10.1371/journal.pone.0182510

Gibbons, C., Dempster, M., & Moutray, M. (2008). Stress and eustress in nursing students. *Journal of Advanced Nursing*, *61*(3), 282–290. https://doi.org/10.1111/j.1365-2648.2007.04497.x

Gilad, I., & Byran, E. (2007). Ergonomic evaluation of the ambulance interior to reduce paramedic discomfort and posture stress. *Human Factors*, *49*(6), 1019–1032. https://doi.org/10.1518/001872007X249884

Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: Interviews and focus groups. *British Dental Journal*, *204*(6), 291–295. https://doi.org/10.1038/bdj.2008.192

Golding, S. E., Horsfield, C., Davies, A., Egan, B., Jones, M., Raleigh, M., Schofield, P., Squires, A., Start, K., Quinn, T., & Cropley, M. (2017). Exploring the psychological health of emergency dispatch centre operatives: A systematic review and narrative synthesis. *PeerJ*. https://doi.org/10.7717/peerj.3735

Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems*, *21*(2), 135–146. https://doi.org/10.1057/ejis.2011.54

Goldstein, D. S. (1987). Stress-induced activation of the sympathetic nervous system. *Baillière's Clinical Endocrinology and Metabolism*, *1*(2), 253–278. https://doi.org/10.1016/S0950-351X(87)80063-0

Gomes, S. F., Santos, M. M., & Carolino, E. T. (2013). Psycho-social risks at work: Stress and coping strategies in oncology nurses. *Revista Latino-Americana de Engermagem*, *21*(6), 1282–1289. https://doi.org/10.1590/0104-1169.2742.2365

Götz, S., Hoven, H., Müller, A., Dragano, N., & Wahrendorf, M. (2018). Age differences in the association between stressful work and sickness absence among full-time employed workers: Evidence from the German socio-economic panel. *International Archives of Occupational and Environmental Health*, *91*(4), 479–496. https://doi.org/10.1007/s00420-018-1298-3

Gouweloos-Trines, J., Tyler, M. P., Giummarra, M. J., Kassam-Adams, N., Landolt, M. A., Kleber, R. J., & Alisic, E. (2017). Perceived support at work after critical

incidents and its relation to psychological distress: A survey among prehospital providers. *Emergency Medicine Journal*, *34*(12), 816. https://doi.org/10.1136/emermed-2017-206584

Granter, E., Wankhade, P., McCann, L., Hassard, J., & Hyde, P. (2019). Multiple dimensions of work intensity: Ambulance work as edgework. *Work, Employment and Society*, *33*(2), 280–297. https://doi.org/10.1177/0950017018759207

Gress, T. W., Denvir, J., & Shapiro, J. I. (2018). Effect of removing outliers on statistical inference: Implications to interpretation of experimental data in medical research. *Marshall Journal of Medicine*, *4*(2), 84–99. https://doi.org/10.18590/mjm.2018.vol4.iss2.9

Gründemann, R. W. M., & Vuuren, C. V. van. (1998). *Preventing absenteeism at the workplace: A European portfolio of case studies* (pp. 1–157). Office for Official Publications of the European Communities. https://op.europa.eu/en/publication-detail/-/publication/2c1ec3f8-dc68-45cf-8ad1-b85553d7f3a5

Gumedze, F. N., & Chatora, T. D. (2014). Detection of outliers in longitudinal count data via overdispersion. *Computational Statistics & Data Analysis*, *79*, 192–202. https://doi.org/10.1016/j.csda.2014.05.018

Gustafsson, K., & Marklund, S. (2011). Consequences of sickness presence and sickness absence on health and work ability: A Swedish prospective cohort study. *International Journal of Occupational Medicine and Environmental Health*, *24*(2), 153–165.

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, *16*(2), 250–279. https://doi.org/10.1016/0030-5073(76)90016-7

Halpern, J., Gurevich, M., Schwartz, B., & Brazeau, P. (2009a). Interventions for critical incident stress in emergency medical services: A qualitative study. *Stress and Health*, *25*(2), 139–149. https://doi.org/10.1002/smi.1230

Halpern, J., Gurevich, M., Schwartz, B., & Brazeau, P. (2009b). What makes an incident critical for ambulance workers? Emotional outcomes and implications for intervention. *Work & Stress*, *23*(2), 173–189. https://doi.org/10.1080/02678370903057317

Halpern, J., Maunder, R. G., Schwartz, B., & Gurevich, M. (2014). Downtime after critical incidents in emergency medical technicians/paramedics. *BioMed Research International*, *2014*(1), 1–7. https://doi.org/10.1155/2014/483140

Hansen, C. D., & Andersen, J. H. (2009). Sick at work—A risk factor for long-term sickness absence at a later date? *Journal of Epidemiology and Community Health (1979-), 63*(5), 397–402. https://doi.org/10.1136/jech.2008.078238

Hansen, C. D., Rasmussen, K., Kyed, M., Nielsen, K. J., & Andersen, J. H. (2012). Physical and psychosocial work environment factors and their association with health outcomes in Danish ambulance personnel—A cross-sectional study. *BMC Public Health*, *12*, 534. https://doi.org/10.1186/1471-2458-12-534

Hardy, M. A. (1993). Regression with dummy variables. In D. S. Foster (Ed.), *Quantitative Applications in the Social Sciences* (pp. 18–26). SAGE.

Harrington, R. (2013). *Stress, health and well-being: Thriving in the 21st century*. Cengage learning.

Harrison, R. V. (1978). Person-environment fit and job stress. In C. L. Cooper & R. Payne (Eds.), *Stress at Work*.

Hart, P. M., & Cooper, C. L. (2001). Occupational stress: Toward a more integrated framework. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaren (Eds.), *Handbook of Industrial, Work and Organizational Psychology* (Vol. 2). Sage.

Hassard, J., Teoh, K. R. H., Visockaite, G., Dewe, P., & Cox, T. (2018). The cost of work-related stress to society: A systematic review. *Journal of Occupational Health Psychology, 23*(1), 1–17. https://doi.org/10.1037/ocp0000069

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence Based Nursing*, *18*(3), 66. https://doi.org/10.1136/eb-2015-102129

Health and Safety Executive. (2004). *Element 1: Recording sickness absence*. http://www.hse.gov.uk/sicknessabsence/step1.htm

Health and Social Care Information Centre. (2017). *Final sickness absence for ambulance trusts*.

Health Careers. (2016). *Careers in the ambulance service*. https://www.healthcareers.nhs.uk/explore-roles/ambulance-service-team

Health Careers. (2018). *Entry requirements and training (paramedic)*. https://www.healthcareers.nhs.uk/explore-roles/ambulance-service-team/roles-ambulance-service/paramedic/entry-requirements-and-training-paramedic

Heart of England NHS Trust. (2010). *Sickness absence definition*. http://www.hefthr.co.uk/?q=node/48

Heidel, E. (2019). *Negative binomial regression*. https://www.scalelive.com/negative-binomial-regression.html

Hemmelgarn, A. L., Glisson, C., & James, L. R. (2006). Orgaanizational culture and climate: Implications for services and interventions research. *Clinical Psychology: Science and Practice*, *13*(1), 73–89. https://doi.org/10.1111/j.1468-2850.2006.00008.x

Hensing, G. (2009). The measurements of sickness absence: A theoretical perspective. *Norsk Epidemiologi*, *19*(2), 147–151. https://doi.org/10.5324/nje.v19i2.584

Hershcovis, M. S., Cameron, A. F., Gervais, L., & Bozeman, J. (2018). The effects of confrontation and avoidance coping in response to workplace incivility. *Journal of Occupational Health Psychology*, *23*(2), 163–174. https://doi.org/10.1037/ocp0000078

Hess, A. S., & Hess, J. R. (2017). Linear regression and correlation. *Transfusion*, *57*(1), 9–11. https://doi.org/10.1111/trf.13928

Hickey, G. L., Kontopantelis, E., Takkenberg, J. J. M., & Beyersdorf, F. (2018). Statistical primer: Checking model assumptions with regression diagnostics. *Interactive Cardiovascular and Thoracic Surgery*, *28*(1), 1–8. https://doi.org/10.1093/icvts/ivy207

Hignett, S., Griffiths, P., Murdey, I. D., & Lee, S. L. (2007). Assessing management of musculoskeletal disorders in the ambulance service. *Occupational Medicine*, *57*(4), 270–276. https://doi.org/10.1093/occmed/kqm007

Hobfoll, S. E., Halbesleben, J., Neveu, J. P., & Westman, M. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*, 103–128. https://doi.org/10.1146/annurev-orgpsych-032117-104640

Hochschild, A. (2003). *The managed heart: Commercialization of human feeling*. University of California Press.

Hoef, J. M. v, & Boveng, P. L. (2007). Quasi-poisson vs. Negative binomial regression: How should we model overdispersed count data? *Ecology*, *88*(11), 2766–2772. https://doi.org/10.1890/07-0043.1

Holm, J. E., & Holroyd, K. A. (1992). The Daily Hassles Scale (Revised): Does it measure stress or symptoms? *Behavioural Assessment*, *14*, 465–482. https://doi.org/10.1037/t57783-000

Holm, S., Liss, P., & Norheim, O. F. (1999). Access to health care in the Scandinavian countries: Ethical aspects. *Health Care Analysis*, *7*, 321–330. https://doi.org/10.1023/A:1009460010196

Holton, M. K., Barry, A. E., & Chaney, J. D. (2015). Employee stress management: An examination of adaptive and maladaptive coping strategies on employee health. *Work*, *53*(2), 299–305. https://doi.org/10.3233/wor-152145

Hopp, L. (2015). Risk of bias reporting in Cochrane systematic reviews. *International Journal of Nursing Practice*, *21*(5), 683–686. https://doi.org/10.1111/ijn.12252

Hoppe, M. J., Gillmore, M. R., Valadez, D. L., Civic, D., Hartway, J., & Morrison, D. M. (2000). The relative costs and benefits of telephone interviews versus self-administered diaries for daily data collection. *Evaluation Review*, *24*(1), 102–116. https://doi.org/10.1177/0193841X0002400105

Hörberg, A., Lindström, V., Kalén, S., Scheja, M., & Vicente, V. (2017). Striving for balance—A qualitative study to explore the experiences of nurses new to the ambulance service in Sweden. *Nurse Education in Practice*, *27*, 63–70. https://doi.org/10.1016/j.nepr.2017.08.015

House of Lords. (2017). *The long-term sustainability of the NHS and adult social care* (pp. 1–132). https://publications.parliament.uk/pa/ld201617/ldselect/ldnhssus/151/151.pdf

Houser, N. O., Krutka, D. G., Roberts, R. P., Pennington, K., & Coerver, N. F. (2017). Navigating the reform–accountability culture in Oklahoma social studies. *Theory & Research in Social Education*, *45*(1), 7–42. https://doi.org/10.1080/00933104.2016.1213213

Huckfeldt, V. E., & Judd, R. C. (1974). Issues in large scale Delphi studies. *Technological Forecasting and Social Change*, *6*, 75–88. https://doi.org/10.1016/0040-1625(74)90007-9

Hugelius, K., Berg, S., Westerberg, E., Gifford, M., & Adolfsson, A. (2014). Swedish ambulance managers' descriptions of crisis support for ambulance staff after potentially traumatic events. *Prehospital and Disaster Medicine*, *29*(6), 589–592. https://doi.org/10.1017/S1049023X14001071

Hultin, H., Lindholm, C., Malfert, M., & Möller, J. (2012). Short-term sick leave and future risk of sickness absence and unemployment—The impact of health status. *BMC Public Health*, *12*(1), 861–869. https://doi.org/10.1186/1471-2458-12-861

Hunt, E., Jones, N., Hastings, V., & Greenberg, N. (2013). TRiM: An organizational response to traumatic events in Cumbria Constabulary. *Occupational Medicine*, *63*(8), 549–555. https://doi.org/10.1093/occmed/kqt113

Hurrell, J. J., & McLaney, M. A. (1988). Exposure to job stress: A new psychometric instrument. *Scandinavian Journal of Work, Environment & Health*, *14*(1), 27–28.

Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice. *Field Methods*, *18*(1), 3–20. https://doi.org/10.1177/1525822X05282260

Jackson, C. T., Covell, N. H., Shear, K. M., Zhu, C., Donahue, S. A., Essock, S. M., & Felton, C. J. (2006). The road back: Predictors of regaining preattack functioning among project liberty clients. *Psychiatric Services*, *57*(9), 1283–1290. https://doi.org/10.1176/ps.2006.57.9.1283

James, A. E. C., & Wright, P. L. (1993). Perceived locus of control: Occupational stress in the ambulance service. *Journal of Managerial Psychology*, *8*(5), 3. https://doi.org/10.1108/02683949310040560

James, C., Southgate, E., Kable, A., Rivett, D. A., Guest, M., & Bohatko-Naismith, J. (2014). Return-to-work coordinators' resourcefulness and the provision of suitable duties for nurses with injuries. *Work*, *48*(4), 557–566. ccm. https://doi.org/10.3233/WOR-141915

Jenkins, C. D. (1992). Assessment of outcomes of health intervention. *Social Science & Medicine*, *35*(4), 367–375. https://doi.org/10.1016/0277-9536(92)90329-o

Jex, S., & Kain, J. (2010). Karasek's (1979) job demands-control model: A summary of current issues and recommendations for future research. In P. L. Perrewé & D. C. Ganster (Eds.), *New Developments in Theoretical and Conceptual Approaches to Job Stress* (pp. 237–268). Emerald Group Publishing Limited.

Johansson, I. M., Skärsäter, I., & Danielson, E. (2013). The experience of working on a locked acute psychiatric ward. *Journal of Psychiatric and Mental Health Nursing*, *20*(4), 321–329. https://doi.org/10.1111/j.1365-2850.2012.01919.x

Jones, A. W., March, D. S., Curtis, F., & Bridle, C. (2016). Bovine colostrum supplementation and upper respiratory symptoms during exercise training: A systematic review and meta-analysis of randomised controlled trials. *BMC Sports Science, Medicine and Rehabilitation*, *8*(1), 21. https://doi.org/10.1186/s13102-016-0047-8

Jones, J., & Hunter, D. (1995). Consensus methods for medical and health services research. *BMJ*, *311*(7001), 376–380. https://doi.org/10.1136/bmj.311.7001.376

Jones, R. P. (2015). Are emergency admissions contagious? *British Journal of Healthcare Management*, *21*(5), 227–235. https://doi.org/10.12968/bjhc.2015.21.5.227

Joseph, D. N., & Whirledge, S. (2017). Stress and the HPA axis: Balancing homeostasis and fertility. *International Journal of Molecular Sciences*, *18*(10), 2224–2239. https://doi.org/10.3390/ijms18102224

Kamp, K. S., O'Connor, M., Spindler, H., & Moskowitz, A. (2019). Bereavement hallucinations after the loss of a spouse: Associations with psychopathological measures, personality and coping style. *Death Studies*, *43*(4), 260–269. https://doi.org/10.1080/07481187.2018.1458759

Kant, Ij., Jansen, N. W. H., van Amelsvoort, L. G. P. M., Swaen, G. M. H., van Leusden, R., & Berkouwer, A. (2009). Screening questionnaire Balansmeter proved successful in predicting future long-term sickness absence in office workers. *Journal of Clinical Epidemiology*, *62*(4), 408-414.e2. https://doi.org/10.1016/j.jclinepi.2008.07.003

Karasek, R. (1979). Job demands, job decision latitude and mental strain: Implications for job redesign. *Administrative Science Quarterly*, *24*(2), 285–308. https://doi.org/10.2307/2392498

Karasek, R., Baker, D., Marxer, F., Ahlbom, A., & Theorell, T. (1981). Job decision latitude, job demands, and cardiovascular disease: A prospective study of Swedish men. *American Journal of Public Health*, *71*, 694–705. https://doi.org/10.2105/ajph.71.7.694

Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a research paradigm and its implications for social work research. *Social Science*, *9*, 255–272. https://doi.org/10.3390/socsci8090255

Kay, I. (2019). *Ambulance quality indicators*. https://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/

Kazemi, M., Zandi, H. G., & Torabi, F. (2015). The relationship between locus of control with coping styles of problem-focused, excited-focused and avoidance among volleyball young men, Karaj City, Iran. *Research Journal of Sport Sciences*, *3*(11), 290–295.

Kiecolt-Glaser, J. K., & Glaser, R. (1988). Methodological issues in behavioral immunology research with humans. *Brain, Behavior, and Immunity*, *2*(1), 67–78. https://doi.org/10.1016/0889-1591(88)90007-4

Kim, H. C., & Oh, S. M. (2013). Noncommunicable diseases: Current status of major modifiable risk factors in Korea. *Journal of Preventive Medicine and Public Health*, *46*(4), 165–172. https://doi.org/10.3961/jpmph.2013.46.4.165

King, G., & Nielsen, R. (2019). Why propensity scores should not be used for matching. *Political Analysis*, *27*(4). https://doi.org/10.1017/pan.2019.11

Kinman, G., Clements, A. J., & Hart, J. (2019). When are you coming back? Presenteeism in U.K prison officers. *The Prison Journal*, *99*(3), 363–383. https://doi.org/10.1177/0032885519838019

Kirschbaum, C., Pirke, K.-M., & Hellhammer, D. H. (1993). The 'trier social stress test' – a tool for investigating psychobiological stress responses in a laboratory setting. *Neuropsychobiology*, *28*(1–2), 76–81. https://doi.org/10.1159/000119004

Kivimäki, M., Head, J., Ferrie, J. E., Hemingway, H., Shipley, M. J., Vahtera, J., & Marmot, M. G. (2005). Working while ill as a risk factor for serious coronary events: The Whitehall II study. *American Journal of Public Health*, *95*(1), 98–102. https://doi.org/10.2105/ajph.2003.035873

Kivimaki, M., Makinen, A., Virtanen, M., Elovainio, M., Vahtera, J., & Firth-Cozens, J. (2004). Sickness absence and the organization of nursing care among hospital nurses. *Scandinavian Journal of Work, Environment and Health*, *30*(6), 468–476.

Kleber, R. J., & Van Der Ploeg, E. (2003). Acute and chronic job stressors among ambulance personnel: Predictors of health symptoms. *Occupational and Environmental Medicine*, *60*. https://doi.org/10.1136/oem.60.suppl_1.i40

Knapstad, M., Holmgren, K., Hensing, G., & Øverland, S. (2014). Previous sickness absence and current low perceived social support at work among employees in the general population: A historical cohort study. *BMJ Open*, *4*(10), e005963. https://doi.org/10.1136/bmjopen-2014-005963

Krantz, G., & Ostergen, P. (2001). Double exposure: The combined impact of domestic responsibilities and job strain on common symptoms in employed Swedish women. *European Journal of Public Health*, *11*(4), 413–419. https://doi.org/10.1093/eurpub/11.4.413

Krishnakumar, A., Narine, L., Soonthorndhada, A., & Thianlai, K. (2014). Family stressors, home demands and responsibilities, coping resources, social connectedness, and Thai older adult health problems: Examining gender variations. *Journal of Aging and Health*, *27*(2), 257–283. https://doi.org/10.1177/0898264314549658

Kristensen, T. S. (1991). Sickness absence and work strain among Danish slaughterhouse workers: An analysis of absence from work regarded as coping behaviour. *Social Science and Medicine*, *32*(1), 15–27. https://doi.org/10.1016/0277-9536(91)90122-s

Krpan, K., Stuss, D., & Anderson, N. (2010). Planful versus avoidant coping: Behavior of individuals with moderate-to-severe traumatic brain injury during a psychosocial stress test. *Journal of the International Neuropsychological Society*, *17*, 248–255. https://doi.org/10.1017/S1355617710001499

Kuiper, N. A. (2012). Humor and resiliency: Towards a process model of coping and growth. *Europe's Journal of Psychology*, *8*(3), 475–491. https://doi.org/10.5964/ejop.v8i3.464

Laaksonen, M., He, L., & Pitkaniemi, J. (2013). The durations of past sickness absences predict future absence episodes. *Journal of Occupational and Environmental Medicine*, *55*(1), 87–92. https://doi.org/10.1097/JOM.0b013e318270d724

Larsson, G., Berglund, A. K., & Ohlsson, A. (2016). Daily hassles, their antecedents and outcomes among professional first responders: A systematic literature review. *Scandinavian Journal of Psychology*, *57*(4), 359–367. https://doi.org/10.1111/sjop.12303

Lawn, S., Roberts, L., Willis, E., Couzner, L., Mohammadi, L., & Goble, E. (2020). The effects of emergency medical service work on the psychological, physical and social well-being of ambulance personnel: A systematic review of qualitative research. *BMC Psychology*, *20*. 348-364. https://doi.org/10.1186/s12888-020-02752-4

Lawson, J. (1980). *How to reduce employee absenteeism, cure tardiness and build employee morale*. Dartnell Corporation.

Lazarus, R. S. (2006). *Stress and emotion: A new synthesis*. Springer Publishing Company.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. Springer.

Le Fevre, M., Matheny, J., & Kolt, G. S. (2003). Eustress, distress, and interpretation in occupational stress. *Journal of Managerial Psychology*, *18*(7/8), 726–744. https://doi.org/10.1108/02683940310502412

LeBlanc, V. R., MacDonald, R. D., McArthur, B., King, K., & Lepine, T. (2005). Paramedic performance in calculation drug dosages following stressful scenarios in a human patient simulator. *Prehospital Emergency Care*, *9*(4), 439–444. https://doi.org/10.1080/10903120500255255

Lee, H. F., Kuo, C. C., Chien, T. W., & Wang, Y. R. (2016). A meta-analysis of the effects of coping strategies on reducing nurse burnout. *Applied Nursing Research*, *31*, 100–110. https://doi.org/10.1016/j.apnr.2016.01.001

Leighton, L., Williams, M., Aubery, D., & Parker, S. H. (1996). Sickness absence following a campaign of vaccination against influenza in the workplace. *Occupational Medicine*, *46*(2), 146–150. https://doi.org/10.1093/occmed/46.2.146

Leineweber, C., Bernhard-Oettel, C., Peristera, P., Eib, C., Nyberg, A., & Westerlund, H. (2017). Interactional justice at work is related to sickness absence: A study using repeated measures in the Swedish working population. *BMC Public Health*, *17*, 1–10. https://doi.org/10.1186/s12889-017-4899-y

Lewis-Beck, M. S., Bryman, A., & Liao, T. F. (2014). *The SAGE Encyclopedia of Social Science Research Methods*. SAGE Research Methods. https://doi.org/10.4135/9781412950589

Leydens, J. A., Moskal, B. M., & Pavelich, M. J. (2004). Qualitative methods used in the assessment of engineering education. *Journal of Engineering Education*, *93*(1), 65–72. https://doi.org/10.1002/j.2168-9830.2004.tb00789.x

Leys, C. (2016). The English NHS: From market failure to trust, professionalism and democracy: The third instalment of our soundings futures series analyses the problems in the NHS and offers some solutions. *Soundings*, *64*, 11.

Liberman, A. M., Best, S. R., Metzler, T. J., Fagan, J. A., Weiss, D. S., & Marmar, C. R. (2002). Routine occupational stress and psychological distress in police. *Policing: An International Journal of Police Strategies & Management*, *25*(2), 421–441. https://doi.org/10.1108/13639510210429446

Liem, A. (2018). Interview schedule development for a Sequential explanatory mixed method design: Complementary-alternative medicine (CAM) study among Indonesian psychologists. *International Journal of Social Research Methodology*, *21*(4), 513–525. https://doi.org/10.1080/13645579.2018.1434864

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.

Loisel, P., Cote, P., Durand, M. J., Franche, R. L., Sullivan, M. J., & Baril, R. (2005). Training the next generation of researchers in work disability prevention: The canadian work disability prevention cihr strategic training program. *Journal of Occupational Rehabilitation*, *15*, 273–284. https://doi.org/10.1007/s10926-005-5936-8

Loudoun, R. J., & Bohle, P. L. (1997). Work/non-work conflict and health in shiftwork: Relationships with family status and social support. *International Journal of Occupational & Environmental Health*, *3*(2), 71–77.

Lourel, M., Ford, Michael. T., Edey Gamassou, C., Guéguen, N., & Hartmann, A. (2009). Negative and positive spillover between work and home: Relationship to

perceived stress and job satisfaction. *Journal of Managerial Psychology*, *24*(5), 438–449. https://doi.org/10.1108/02683940910959762

Mahony, K. L. (2001). Management and the creation of occupational stressors in an Australian and a UK ambulance service. *Australian Health Review*, *24*(4), 135–145.

Malterud, K., Siersma, V. D., & Guassora, A. D. (2015). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research*, *26*(13), 1753–1760. https://doi.org/10.1177/1049732315617444

Mann, C. J. (2003). Observational research methods. Research design II: Cohort, cross sectional, and case-control studies. *Emergency Medicine Journal*, *20*(1), 54. https://doi.org/10.1136/emj.20.1.54

Mann, S. (2004). 'People-work': Emotion management, stress and coping. *British Journal of Guidance & Counselling*, *32*(2), 205–221. https://doi.org/10.1080/0369880410001692247

Mänty, M., Lallukka, T., Lahti, J., Pietiläinen, O., Laaksonen, M., Lahelma, E., & Rahkonen, O. (2017). Physical and mental health functioning after all-cause and diagnosis-specific sickness absence: A register-linkage follow-up study among ageing employees. *BMC Public Health*, *17*(1), 1–9. https://doi.org/10.1186/s12889-017-4051-z

Marinker, M. (1975). Why make people patients? *Journal of Medical Ethics*, *1*, 81–84. https://doi.org/10.1136/jme.1.2.81

Markussen, S. (2012). The effects of sick-leave on earnings. *Journal of Population Economics*, *25*(4), 1287–1306.

Marmot, M., Feeney, A., Shipley, M., North, F., & Syme, S. L. (1995). Sickness absence as a measure of health status and functioning: From the UK Whitehall II study. *Journal of Epidemiology and Community Health*, *49*, 124–130.

Martin, R., & Wall, T. D. (1989). Attentional demand and cost responsibility as stressors in shopfloor jobs. *Academy of Management Journal*, *32*(1), 69–86. https://doi.org/10.2307/256420

Martínez-Iñigo, D., Totterdell, P., Alcover, C. M., & Holman, D. (2007). Emotional labour and emotional exhaustion: Interpersonal and intrapersonal mechanisms. *Work & Stress*, *21*(1), 30–47. https://doi.org/10.1080/02678370701234274

Martínez-Mesa, J., González-Chica, D. A., Duquia, R. P., Bonamigo, R. R., & Bastos, J. L. (2016). Sampling: How to select participants in my research study? *Anais Brasileiros de Dermatologia*, *91*(3), 326–330. https://doi.org/10.1590/abd1806-4841.20165254

Matud, M. P. (2004). Gender differences in stress and coping styles. *Personality and Individual Differences*, *37*(7), 1401–1415. https://doi.org/10.1016/j.paid.2004.01.010

Mauya, E. N. (2015). The importance of setting performance targets on service delivery in performance contracting at the ministry of tourism, Kenya. *European Centre for Research Training and Development*, *3*(5), 1–8.

McCann, L., Granter, E., Hyde, P., & Hassard, J. (2013). Still blue-collar after all these years? An ethnography of the professionalization of emergency ambulance work. *Journal of Management Studies*, *50*(5), 750–776.

McDonald, J. H. (2014). *Handbook of biological statistics* (3rd ed). Sparky House Publishing.

McGreevy, K. M., Lipsitz, S. R., Linder, J. A., Rimm, E., & Hoel, D. G. (2009). Using median regression to obtain adjusted estimates of central tendency for skewed laboratory and epidemiologic data. *Clinical Chemistry*, *55*(1), 165–169.

McKim, C. A. (2017). The value of mixed methods research: A mixed methods study. *Journal of Mixed Methods Research*, *11*(2), 202–222. https://doi.org/10.1177/1558689815607096

McLean, C. P., Handa, S., Dickstein, B. D., Benson, T. A., Baker, M. T., Isler, W. C., Peterson, A. L., & Litz, B. T. (2013). Posttraumatic growth and posttraumatic stress among military medical personnel. *Psychological Trauma: Theory, Research, Practice, and Policy*, *5*(1), 62–68. pdh. https://doi.org/10.1037/a0022949

McTiernan, K., & McDonald, N. (2015). Occupational stressors, burnout and coping strategies between hospital and community psychiatric nurses in a Dublin region. *Journal of Psychiatric and Mental Health Nursing*, *22*(3), 208–218. https://doi.org/10.1111/jpm.12170

McVicar, A. (2016). Scoping the common antecedents of job stress and job satisfaction for nurses (2000–2013) using the job demands–resources model of stress. *Journal of Nursing Management*, *24*(2), 112–136. https://doi.org/10.1111/jonm.12326

Mechanic, D. (1986). Illness behaviour: An overview. In S. McHugh & T. M. Vallis (Eds.), *Illness Behavior: A Multidisciplinary Model* (pp. 101–109). Springer US. https://doi.org/10.1007/978-1-4684-5257-0_6

Mechanic, D. (2000). Rediscovering the social determinants of health. *Health Affairs*, *19*(3), 269–276. https://doi.org/10.1377/hlthaff.19.3.269

Mellifont, D., Smith-Merry, J., & Scanlan, J. N. (2016). Pitching a Yerkes–Dodson curve ball? A study exploring enhanced workplace performance for individuals with

anxiety disorders. *Journal of Workplace Behavioral Health*, *31*(2), 71–86. https://doi.org/10.1080/15555240.2015.1119654

Menzies, I. E. P. (1960). Nurses under stress. *International Nursing Review*, *7*, 9–16.

Messerli-Bürgy, N., Arhab, A., Stülb, K., Kakebeeke, T. H., Zysset, A. E., Leeger-Aschmann, C. S., Schmutz, E. A., Ehlert, U., Kriemler, S., Jenni, O. G., Munsch, S., & Puder, J. J. (2018). Physiological stress measures in preschool children and their relationship with body composition and behavioral problems. *Developmental Psychobiology*, *60*(8), 1009–1022. https://doi.org/10.1002/dev.21782

Michie, S., & Williams, S. (2003). Reducing work related psychological ill health and sickness absence: A systematic literature review. *Occupational and Environmental Medicine*, *60*(1), 3–9. PMC. https://doi.org/10.1136/oem.60.1.3

Midi, H., & Ariffin, S. B. (2013). Modified standardized pearson residual for the identification of outliers in logistic regression model. *Journal of Applied Sciences*, *13*(6), 828–836. https://doi.org/10.3923/jas.2013.828.836

Mildenhall, J. (2012). Occupational stress, paramedic informal coping strategies: A review of the literature. *Journal of Paramedic Practice*, *4*(6), 318–328.

Mind. (2013). *Supporting someone's mental wellbeing: For friends and family of ambulance service personnel*. https://www.mind.org.uk/news-campaigns/campaigns/blue-light-support/blue-light-information/for-friends-and-family-how-to-support-someones-mental-wellbeing/

Mitchell, J. T. (1983). When disaster strikes... The critical incident stress debriefing process. *Journal of Emergency Medical Services*, *8*, 36–39.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, *6*(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

Money, A., Hussey, L., Thorley, K., Turner, S., & Agius, R. (2010). Work-related sickness absence negotiations: GPs' qualitative perspectives. *British Journal of General Practice*, *60*(579), 721–728. https://doi.org/10.3399/bjgp10X532350

Moos, R. H., Fenn, C. B., Billings, A. G., & Moos, B. S. (1988). Assessing life stressors and social resources: Applications to alcoholic patients. *Journal of Substance Abuse*, *1*(2), 135–152. https://doi.org/10.1016/S0899-3289(88)80017-8

Moos, R. H., & Holahan, C. J. (2003). Dispositional and contextual perspectives on coping: Toward an integrative framework. *Journal of Clinical Psychology*, *59*(12), 1387–1403. https://doi.org/10.1002/jclp.10229

Moray, N. (2013). *Mental Workload: Its Theory and Measurement*. Springer.

Morgan, D. L. (1998). Practical strategies for combining qualitative and quantitative methods: Applications to health research. *Qualitative Health Research*, *8*(3), 362–376. https://doi.org/10.1177/104973239800800307

Morgan, D. L. (2014). Pragmatism as a paradigm for social research. *Qualitative Inquiry*, *20*(8), 1045–1053. https://doi.org/10.1177/1077800413513733

Morse, A. (2017). *NHS Ambulance Services*. https://www.nao.org.uk/wp-content/uploads/2017/01/NHS-Ambulance-Services.pdf

Murray, E., Treweek, S., Pope, C., MacFarlane, A., Ballini, L., Dowrick, C., Finch, T., Kennedy, A., Mair, F., O'Donnell, C., Ong, B. N., Rapley, T., Rogers, A., & May, C. (2010). Normalisation process theory: A framework for developing, evaluating and implementing complex interventions. *BMC Medicine*, *8*(1), 63. https://doi.org/10.1186/1741-7015-8-63

Musselwhite, K., Cuff, L., McGregor, L., & King, K. M. (2007). The telephone interview is an effective method of data collection in clinical nursing research: A discussion paper. *International Journal of Nursing Studies*, *44*(6), 1064–1070. https://doi.org/10.1016/j.ijnurstu.2006.05.014

Nätti, J., Oinas, T., & Anttila, T. (2015). Time pressure, working time control and long-term sickness absence. *Occupational and Environmental Medicine*, *72*(4), 265. https://doi.org/10.1136/oemed-2014-102435

Nelder, J. A., & Wedderburn, R. W. M. (1972). Generalized linear models. *Journal of the Royal Statistical Society. Series A (General)*, *135*(3), 370–384. https://doi.org/10.2307/2344614

Nemeth, M., Pschernig, E., Wallner, B., & Millesi, E. (2016). Non-invasive cortisol measurements as indicators of physiological stress responses in guinea pigs. *PeerJ*. https://doi.org/10.7717/peerj.1590

Nestel, D., Ivkovic, A., Hill, R. A., Warrens, A. N., Paraskevas, P. A., McDonnell, J. A., Mudarikwa, R. S., & Browne, C. (2012). Benefits and challenges of focus groups in the evaluation of a new Graduate Entry Medical Programme. *Assessment & Evaluation in Higher Education*, *37*(1), 1–17. https://doi.org/10.1080/02602938.2010.494232

Newton, R. R., & Rudestam, K. E. (2019). Chapter 5: What are the assumptions of statistical testing? In *Your statistical consultant: Answers to your data analysis questions* (Second Edition). SAGE. https://doi.org/10.4135/9781506374673

Nguyen, T. T. V., Thijs, H., Tran-Duy, A., Boonen, A., Heldmann, F., & Braun, J. (2013). Presenteeism predicts sick leave better than BASDAI and/or BASFI in a

longitudinal cohort of patients with ankylosing spondylitis (EASIC). *Arthritis and Rheumatism*, *65*.

NHS Digital. (2018). *NHS sickness absence rates—January 2018 to March 2018 and annual summary 2009-10 to 2017-18*.

NHS Digital. (2019). *NHS Sickness absence rates Janruary 2019 to March 2019 and Annual Summary 2010-2012 to 2018-119*. https://digital.nhs.uk/data-and-information/publications/statistical/nhs-sickness-absence-rates/january-2019-to-march-2019-and-annual-summary-2010-11-to-2018-19

NHS Employers. (2017). Guidelines of prevention and management of sickness absence. NHS Employers. https://www.nhsemployers.org/-/media/Employers/Documents/Retain-and-improve/HSWPG-Guidelines-on-prevention-and-management-of-sickness-absence.pdf

NHS England. (2015). *Simon Stevens announces major drive to improve health in NHS workplace*. https://www.england.nhs.uk/2015/09/nhs-workplace/

NHS England. (2019). *Ambulance quality indicators: June 2019*. https://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/ambulance-quality-indicators-data-2019-20/

National Institute for Health Care Excellence [NICE]. (2019). Workplace health: Long-term sickness absence and capability to work (Report no. NG146). National Institute for Health Care Excellence. https://www.nice.org.uk/guidance/ng146

Nielsen, M. B., Indregard, A.M. R., & Øverland, S. (2016). Workplace bullying and sickness absence: A systematic review and meta-analysis of the research literature. *Scandinavian Journal of Work, Environment & Health*, *5*, 359–370. https://doi.org/10.5271/sjweh.3579

Nirel, N., Goldwag, R., Feigenberg, Z., Abadi, D., & Halpern, P. (2008). Stress, work overload, burnout, and satisafaction among paramedics in Israel. *Prehospital and Disaster Medicine*, *23*(6), 537–546.

Nordby, H. (2015). Communicative management in ambulance services: A study of interaction between station managers and paramedics working in frontline units. *The Journal of Medical Practice Management*, *30*(5), 304–307.

North, F., Syme, S. L., Feeney, A., Head, J., Shipley, M., & Marmot, M. G. (1993). Explaining socioeconomic differences in sickness absence: The Whitehall II study. *BMJ*, *306*, 361–366. https://doi.org/10.1136/bmj.306.6874.361

Notenbomer, A., Roelen, C. A. M., van Rhenen, W., & Groothoff, J. W. (2016). Focus group study exploring factors related to frequent sickness absence. *PLOS ONE*, *11*(2), e0148647. https://doi.org/10.1371/journal.pone.0148647

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, *16*(1), 1–13. https://doi.org/10.1177/1609406917733847

Nuffield Trust. (2019). *Ambulance response times*. https://www.nuffieldtrust.org.uk/resource/ambulance-response-times

Odeen, M., Magnussen, L. H., Maeland, S., Larun, L., Eriksen, H. R., & Tveito, T. H. (2013). Systematic review of active workplace interventions to reduce sickness absence. *Occupational Medicine*, *63*(1), 7–16. https://doi.org/10.1093/occmed/kqs198

Office for Budget Responsibility. (2018). *Economic and fiscal outlook* (No. CM9713). Office for Budget Responsibility.

Office for National Statistics. (2019). *Sickness absence in the UK labour market: 2018*. Office for National Statistics.

Oginska-Bulik, N. (2013). Negative and positive effects of traumatic experiences in a group of emergency service workers: The role of personal and social resources. *Medycyna Pracy*, *64*(4), 463–472.

Olsen, W. (2004). Triangulation in social research: Qualitative and quantitative methods can really be mixed. In M. Holborn (Ed.), *Developments in Sociology*. Causeway Press.

Oppenauer, V., & Van De Voorde, K. (2018). Exploring the relationships between high involvement work system practices, work demands and emotional exhaustion: A multi-level study. *The International Journal of Human Resource Management*, *29*(2), 311–337. https://doi.org/10.1080/09585192.2016.1146321

O'Reilly, C. A., & Chatman, J. A. (1996). Culture as social control: Corporations, cults, and commitment. In *Research in organizational behavior: An annual series of analytical essays and critical reviews, Vol. 18.* (pp. 157–200). Elsevier Science.

Osborne, R. (2015). Should emergency medicine registrars focus on seeing patients and leave the teaching of medical students to others? No. *Emergency Medicine Australasia*, *27*(1), 78–79. https://doi.org/10.1111/1742-6723.12351

Ozdemir, D., & Arslan, F. (2018). An investigation of the relationship between social support and coping with stress in women with breast cancer. *Psycho-Oncology*, *27*(9). https://doi.org/10.1002/pon.4798

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Palumbo, M. V., Wu, G., Shaner-McRae, H., Rambur, B., & McIntosh, B. (2012). Tai Chi for older nurses: A workplace wellness pilot study. *Applied Nursing Research*, *25*(1), 54–59. https://doi.org/10.1016/j.apnr.2010.01.002

Pansiri, J. (2005). Pragmatism: A methodological approach to researching strategic alliances in tourism. *Tourism and Hospitality Planning & Development*, *2*(3), 191–206. https://doi.org/10.1080/14790530500399333

Parasuraman, S., & Alutto, J. A. (1984). Sources and outcomes of stress in organizational settings: Toward the development of a structural model. *The Academy of Management Journal*, *27*(2), 330–350. https://doi.org/10.2307/255928

Parent-Lamarche, A., & Marchand, A. (2019). Work and depression: The moderating role of personality traits. *Journal of Workplace Behavioral Health*, *34*(3), 219–239. https://doi.org/10.1080/15555240.2019.1614455

Parke, C. (2015). *Essential First Steps to Data Analysis: Scenario-Based Examples Using SPSS*. SAGE Publications. https://doi.org/10.4135/9781506335148

Parsons, T. (1951). Illness and the role of the physician: A sociological perspective. *American Journal of Orthopsychiatry*, *21*(3), 452–460. https://doi.org/10.1111/j.1939-0025.1951.tb00003.x

Parvaiz, G. S., Mufti, O., & Wahab, M. (2016). Pragmatism for mixed method research at higher education level. *Business and Economic Review*, *8*(2), 67–79.

Pasquali, R. (2012). The hypothalamic–pituitary–adrenal axis and sex hormones in chronic stress and obesity: Pathophysiological and clinical aspects. *Annals of the New York Academy of Sciences*, *1264*(1), 20–35. https://doi.org/10.1111/j.1749-6632.2012.06569.x

Pate, R. R., Pratt, M., Blair, S. N., Haskell, W. L., Macera, C. A., Bouchard, C., Buchner, D., Ettinger, W., Heath, G. W., King, A. C., Kriska, A., Leon, A. S., Marcus, B. H., Morris, J., Paffenbarger, R. S., Patrick, K., Pollock, M. L., Rippe, J. M., Sallis, J., & Wilmore, J. H. (1995). Physical activity and public health: A recommendation from the centers for disease control and prevention and the american college of sports medicine. *JAMA*, *273*(5), 402–407. https://doi.org/10.1001/jama.1995.03520290054029

Patton, M. Q. (2002). *Qualitative research and evaluation methods*. SAGE Publications.

Pek, E., Fuge, K., Marton, J., Banfai, B., Gombos, G. C., & Betlehem, J. (2015). Cross-sectional survey on self-reported health of ambulance personnel. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, *23*(1), 14. https://doi.org/10.1186/s13049-015-0087-1

Pereira, M., Williams, S., Restrick, L., Cullinan, P., & Hopkinson, N. S. (2017). Healthcare worker influenza vaccination and sickness absence – an ecological study. *Clinical Medicine*, *17*(6), 484–489. https://doi.org/10.7861/clinmedicine.17-6-484

Pertold, F., & Westergaard-Nielsen, N. (2018). Firm insurance and sickness absence of employees. *International Journal of Manpower*, *39*(1), 133–151. https://doi.org/10.1108/IJM-05-2016-0097

Petrie, K, Gayed, A., Bryan, B. T., Deady, M., Madan, I., Savic, A., Wooldridge, Z., Counson, I., Calvo, R. A., Glozier, N., & Harvey, S. B. (2018). The importance of manager support for the mental health and well-being of ambulance personnel. *PLoS One*, *13*(5). https://doi.org/10.1371/journal.pone.0197802

Petrie, K, Jago, L., & Devcich, D. (2007). The role of illness perceptions in patients with medical conditions. *Current Opinion in Psychiatry*, *20*(2), 163–167. https://doi.org/10.1097/YCO.0b013e328014a871

Petrie, Katherine, Milligan-Saville, J., Gayed, A., Deady, M., Phelps, A., Dell, L., Forbes, D., Bryant, R. A., Calvo, R. A., Glozier, N., & Harvey, S. B. (2018). Prevalence of PTSD and common mental disorders amongst ambulance personnel: A systematic review and meta-analysis. *Social Psychiatry and Psychiatric Epidemiology*, 1–13. https://doi.org/10.1007/s00127-018-1539-5

Pisarski, A., Bohle, P., & Callan, V. J. (2002). Extended shifts in ambulance work: Influences on health. *Stress and Health*, *18*(3), 119–126. https://doi.org/10.1002/smi.935

Pittman, C. T. (2011). Getting mad but ending up sad: The mental health consequences for african americans using anger to cope with racism. *Journal of Black Studies*, *42*(7), 1106–1124. https://doi.org/10.1177/0021934711401737

Pollock, A. (2015). Historical perspectives in the ambulance service. In P. Wankhade & K. Mackway-Jones (Eds.), *Ambulance Services: Leadership and Management Perspectives* (pp. 17–28). Springer International Publishing. https://doi.org/10.1007/978-3-319-18642-9_2

Popov, B., Raković, S., & Jelic, D. (2017). Organizational health framework: Predicting employee well-being and organisational performance. *Applied Psychology*, *10*(1), 81–101. https://doi.org/10.19090/pp.2017.1.81-101

Porter, A., Button, L., Duff K., Evans, A., Snooks, H., & Watkins, A. (2009). When would you call 999? Perceptions of emergency ambulances' role in unscheduled health care. *Emergency Medicine Journal,* 26(3), 3. http://dx.doi.org/10.1136/emj.2009.075416c

Pourhoseingholi, M. A., Baghestani, A. R., & Vahedi, M. (2012). How to control confounding effects by statistical analysis. *Gastroenterology and Hepatology from Bed to Bench*, *5*(2), 79–83.

Price, L. (2006). Treating the clock and not the patient: Ambulance response times and risk. *Quality & Safety in Health Care*, *15*(2), 127–130. https://doi.org/10.1136/qshc.2005.015651

QSR International. (2018). *NVivo qualitative analysis software* (Version 12) [Computer software].

Quaile, A. (2016). Ambulance staff contemplate suicide due to stress and poor mental health. *Journal of Paramedic Practice*, *8*(5), 224–226. https://doi.org/10.12968/jpar.2016.8.5.224

Quick, J. C., & Henderson, D. F. (2016). Occupational stress: Preventing suffering, enhancing wellbeing. *International Journal of Environmental Research and Public Health*, *13*(5), 1–11. https://doi.org/10.3390/ijerph13050459

Quick, J. D., Nelson, D. L., Quick, J. D., & Orman, D. K. (2001). An isomorphic theory of stress: The dynamics of person–environment fit. *Stress and Health*, *17*(3), 147–157. https://doi.org/10.1002/smi.893

Ragins, B. R. (2008). Disclosure disconnects: Antecedents and consequences of disclosing invisible stigmas across life domains. *The Academy of Management Review*, *33*(1), 194–215. https://doi.org/10.2307/20159383

Rappaport, S. M. (2012). Discovering environmental causes of disease. *Journal of Epidemiology and Community Health*, *66*(2), 99. https://doi.org/10.1136/jech-2011-200726

Regehr, C., Goldberg, G., Glancy, G. D., & Knott, T. (2002). Posttraumatic symptoms and disability in paramedics. *The Canadian Journal of Psychiatry*, *47*(10), 953–958.

Regehr, C., Goldberg, G., & Hughes, J. (2002). Exposure to human tragedy, empathy, and trauma in ambulance paramedics. *American Journal of Orthopsychiatry*, *72*(4), 505–513. https://doi.org/10.1037/0002-9432.72.4.505

Regehr, C., & Millar, D. (2007). Situation critical: High demand, low control, and low support in paramedic organizations. *Traumatology*, *13*(1), 49–58. https://doi.org/10.1177/1534765607299912

Revelle, W., & Condon, D. M. (2019). Reliability from α to ω: A tutorial. *Psychological Assessment*. https://doi.org/10.1037/pas0000754

Roberts, C., & Torgerson, D. (1998). Randomisation methods in controlled trials. *BMJ, 317*(7168), 1301. https://doi.org/10.1136/bmj.317.7168.1301

Roberts, M. H., Sim, M. R., Black, O., & Smith, P. (2015). Occupational injury risk among ambulance officers and paramedics compared with other healthcare workers in Victoria, Australia: Analysis of workers' compensation claims from 2003 to 2012. *Occupational and Environmental Medicine, 72*(7), 489–495. https://doi.org/10.1136/oemed-2014-102574

Roberts, Minainyo Helen, Sim, M. R., Black, O., & Smith, P. (2015). Occupational injury risk among ambulance officers and paramedics compared with other healthcare workers in Victoria, Australia: Analysis of workers' compensation claims from 2003 to 2012. *Occupational and Environmental Medicine, 72*(7), 489. https://doi.org/10.1136/oemed-2014-102574

Robinson, O. C. (2014). Sampling in interview-based qualitative research: A theoretical and practical guide. *Qualitative Research in Psychology*, *11*(1), 25–41. https://doi.org/10.1080/14780887.2013.801543

Roelen, C. A. M., Magerøy, N., van Rhenen, W., Groothoff, J. W., van der Klink, J. J. L., Pallesen, S., Bjorvatn, B., & Moen, B. E. (2013). Low job satisfaction does not identify nurses at risk of future sickness absence: Results from a Norwegian cohort study. *International Journal of Nursing Studies*, *50*(3), 366–373. https://doi.org/10.1016/j.ijnurstu.2012.09.012

Roelen, C. A. M., Koopmans, P. C., Notenbomer, A., & Groothoff, J. W. (2008). Job satisfaction and sickness absence: A questionnaire survey. *Occupational Medicine, 58*(8), 567–571. https://doi.org/10.1093/occmed/kqn113

Roger, D., Jarvis, G., & Najarian, B. (1993). Detachment and coping: The construction and validation of a new scale for measuring coping strategies. *Personality and Individual Differences, 15*(6), 619–626. https://doi.org/10.1016/0191-8869(93)90003-L

Roohafza, H. R., Afshar, H., Keshteli, A. H., Mohammadi, N., Feizi, A., Taslimi, M., & Adibi, P. (2014). What's the role of perceived social support and coping styles in depression and anxiety? *Journal of Research in Medical Sciences, 19*(10), 944–949.

Rosén, H., Persson, J., Rantala, A., & Behm, L. (2018). "A call for a clear assignment" – A focus group study of the ambulance service in Sweden, as experienced by present

and former employees. *International Emergency Nursing*, *36*, 1–6. https://doi.org/10.1016/j.ienj.2017.07.003

Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, *70*(1), 41–55. https://doi.org/10.1093/biomet/70.1.41

Roth, G., Shahar, B.-H., Zohar-Shefer, Y., Benita, M., Moed, A., Bibi, U., Kanat-Maymon, Y., & Ryan, R. M. (2017). Benefits of emotional integration and costs of emotional distancing. *Journal of Personality*, *86*(6), 1–16. https://doi.org/10.1111/jopy.12366

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*(1), 1–28. https://doi.org/10.1037/h0092976

Roussel, N. A., Demeure, I., Heyrman, A., Struyf, F., Kos, D., Nijs, J., Clerck, M. D., & Zinzen, E. (2015). Effect of a multidisciplinary program for the prevention of low back pain in hospital employees: A randomized controlled trial. *Journal of Back and Musculoskeletal Rehabilitation*, *28*(3), 539–549. https://doi.org/10.3233/BMR-140554.

Ruiz-Quintanilla, A. S., & Blancero, D. (1996). Open door policies: Measuring impact using attitude surveys. *Human Resource Management*, *35*(3), 269. https://doi.org/10.1002/(SICI)1099-050X(199623)35:3<269::AID-HRM1>3.0.CO;2-V

SAGE Research Methods. (2019). *The SAGE Encyclopedia of Communication Research Methods* (Vol. 4). California. https://doi.org/10.4135/9781483381411

Sahler, O. J. Z., & Carr, J. E. (2009). Coping strategies. In W. B. Carey, A. C. Crocker, W. L. Coleman, E. R. Elias, & H. M. Feldman (Eds.), *Developmental-Behavioral Pediatrics* (Vol. 4, pp. 491–496). Elsevier. https://doi.org/10.1016/B978-1-4160-3370-7.00050-X

Saijo, Y., Ueno, T., & Hashimoto, Y. (2007). Job stress and depressive symptoms among Japanese fire fighters. *American Journal of Industrial Medicine*, *50*(1), 470–480. https://doi.org/10.1002/ajim.20460

Salkind, N. J. (2019). Multiple regression. In *Encyclopedia of Research Design*. SAGE. https://doi.org/10.4135/9781412961288

Sandelowski, M. (1995). Sample size in qualitative research. *Research in Nursing & Health*, *18*(2), 179–183. https://doi.org/10.1002/nur.4770180211

Sanderson, K., & Cocker, F. (2013). Presenteeism: Implications and health risks. *Australian Family Physician*, *42*(4), 172–175.

Sanne, B., Mykletun, A., Dahl, A. A., Moen, B. E., & Tell, G. S. (2005). Testing the Job Demand-Control-Support model with anxiety and depression as outcomes: The Hordaland Health Study. *Occupational Medicine*, *55*(6), 463–473. https://doi.org/10.1093/occmed/kqi071

Santarnecchi, E., Sprugnoli, G., Tatti, E., Mencarelli, L., Neri, F., Momi, D., Di Lorenzo, G., Pascual-Leone, A., Rossi, S., & Rossi, A. (2018). Brain functional connectivity correlates of coping styles. *Cognitive, Affective, & Behavioral Neuroscience*, *18*(3), 495–508. https://doi.org/10.3758/s13415-018-0583-7

Schaufeli, W. B, & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organisational Behaviour*, *25*(3), 293–315. https://doi.org/10.1002/job.248

Schaufeli, W. B, Bakker, A. B., & van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behavior*, *30*, 893–917. https://doi.org/10.1002/job.595

Schaufeli, Wilmar B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, *25*(3), 293–315. https://doi.org/10.1002/job.248

Schell, E., Theorell, T., Nilsson, B., & Saraste, H. (2013). Work health determinants in employees without sickness absence. *Occupational Medicine*, *63*(1), 17–22. https://doi.org/10.1093/occmed/kqs164

Schneiderman, N., Ironson, G., & Siegel, S. D. (2005). Stress and health: Psychological, behavioral, and biological determinants. *Annual Review of Clinical Psychology*, *1*, 607–628. https://doi.org/10.1146/annurev.clinpsy.1.102803.144141

Schreuder, J. A. H., van der Klink, J. J. L., Groothoff, J. W., Roelen, C. A. M., Plat, N., Mageroy, N., & Moen, B. E. (2011). Self-rated coping styles and registered sickness absence among nurses working in hospital care: A prospective 1-year cohort study. *International Journal of Nursing Studies*, *48*(7), 838–846.

Schreuder, Jolanda A.H., Roelen, C. A. M., Koopmans, P. C., Moen, B. E., & Groothoff, J. W. (2010). Effort–reward imbalance is associated with the frequency of sickness absence among female hospital nurses: A cross-sectional study. *International Journal of Nursing Studies*, *47*(5), 569–576. https://doi.org/10.1016/j.ijnurstu.2009.10.002

Schultz, A. B., & Edington, D. W. (2007). Employee health and presenteeism: A systematic review. *Journal of Occupational Rehabilitation*, *17*(3), 547–579. s3h.

Sedgwick, P., & Marston, L. (2010). Relative risks. *BMJ*, *341*, c3983. https://doi.org/10.1136/bmj.c3983

Segerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. *Psychological Bulletin*, *130*(4), 601–630. https://doi.org/10.1037/0033-2909.130.4.601

Selye, H. (1936). A syndrome produced by diverse nocuous agents. *Nature*, *138*(32).

Selye, H. (1956). What is stress? *Metabolism: Clinical and Experimental*, *5*, 525–530.

Selye, H. (1976). Stress without distress. In G. Serban (Ed.), *Psychopathology of Human Adaptation*. Springer.

Serra, C., Soler-Font, M., García, A. M., Peña, P., Vargas-Prada, S., & Ramada, J. M. (2019). Prevention and management of musculoskeletal pain in nursing staff by a multifaceted intervention in the workplace: Design of a cluster randomized controlled trial with effectiveness, process and economic evaluation. *BMC Public Health*, *19*(1), 348. https://doi.org/10.1186/s12889-019-6683-7

Setti, I., Zito, M., Colombo, L., Cortese, C. G., Ghislieri, C., & Argentero, P. (2018). Well-being and affective commitment among ambulance volunteers: A mediational model of job burnout. *Journal of Social Service Research*, *44*(2), 236–248. https://doi.org/10.1080/01488376.2018.1442898

Shakespeare-Finch, J. E., Smith, S. G., Gow, K. M., Embelton, G., & Baird, L. (2003). The prevalence of post-traumatic growth in emergency ambulance personnel. *Traumatology*, *9*(1), 58–71. https://doi.org/10.1177/153476560300900104

Shantz, A., & Alfes, K. (2015). Work engagement and voluntary absence: The moderating role of job resources. *European Journal of Work and Organizational Psychology*, *24*(4), 530–543. https://doi.org/10.1080/1359432X.2014.936392

Sharma, R., & Kumar, P. (2016). Emotional Intelligence and Stress Coping Styles: A Study of Doctors of Private Hospitals in and Around Chandigarh. *International Journal of Management and Social Sciences*, *3*(3), 660–675. https://doi.org/10.21013/jmss.v3.n3.p24

Sharman, L. S., Dingle, G. A., Vingerhoets, A. J. J. M., & Vanman, E. J. (2019). Using crying to cope: Physiological responses to stress following tears of sadness. *Emotion*. https://doi.org/10.1037/emo0000633

Shenhar, A. (1993). Keeping management's door open: How to establish an open-door policy that works. *Leadership & Organization Development Journal*, *14*(2), 8. https://doi.org/10.1108/01437739310032665

Siegrist, J. (2017). The Effort–Reward Imbalance Model. In *The Handbook of Stress and Health* (pp. 24–35). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118993811.ch2

Siegrist, J., & Li, J. (2017). Work stress and altered biomarkers: A synthesis of findings based on the effort–reward imbalance model. *International Journal of Environmental Research and Public Health*, *14*(11), 1–18. https://doi.org/10.3390/ijerph14111373

Siegrist, J., & Marmot, M. (2004). Health inequalities and the psychosocial environment—Two scientific challenges. *Health Inequalities and the Psychosocial Environment*, *58*(8), 1463–1473. https://doi.org/10.1016/S0277-9536(03)00349-6

Siegrist, J., Siegrist, K., & Weber, I. (1986). Sociological concepts in the etiology of chronic disease: The case of ischemic heart disease. *Special Issue: Medical Sociology and the Who's Programme for Europe*, *22*(2), 247–253. https://doi.org/10.1016/0277-9536(86)90073-0

Simmons, L., Jones, A. W., Siriwardena, N., & Adler, C. (2019). Interventions to reduce sickness absence among healthcare workers: A systematic review. *International Journal of Emergency Services*, *8*(2), 147–162. https://doi.org/10.1108/IJES-05-2018-0028

Simpson, F., Sweetman, E. A., & Doig, G. S. (2010). A systematic review of techniques and interventions for improving adherence to inclusion and exclusion criteria during enrolment into randomised controlled trials. *Trials*, *11*(1), 17. https://doi.org/10.1186/1745-6215-11-17

Simpson, K. (2013). Post-traumatic stress disorder among ambulance personnel: A review of the literature. *Journal of Paramedic Practice*, *5*(11), 638–644.

Singh, A. P. (2017). Coping with work stress in police employees. *Journal of Police and Criminal Psychology*, *32*(3), 225–235. https://doi.org/10.1007/s11896-016-9215-8

Singh, S. (2017). How to conduct and interpret systematic reviews and meta-analyses. *Clinical and Translational Gastroenterology*, *8*(5), 5. https://doi.org/10.1038/ctg.2017.20

Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin*, *129*(2), 216–269. https://doi.org/10.1037/0033-2909.129.2.216

Skinner, N., & Pocock, B. (2013). Paid annual leave in Australia: Who gets it, who takes it and implications for work–life interference. *Journal of Industrial Relations*, *55*(5), 681–698. https://doi.org/10.1177/0022185613491680

Skodol, A. E. (2010). The resilient personality. In J. W. Reich, A. J. Zautra, & J. S. Hall (Eds.), *Handbook of Adult Resilience* (pp. 112–125). The Guilford Press.

Slank, S. (2019). Rethinking the imposter phenomenon. *Ethical Theory and Moral Practice*, *22*(1), 205–218. https://doi.org/10.1007/s10677-019-09984-8

Sluiter, J. K., de Croon, E. M., Meijman, T. F., & Frings-Dresen, M. H. W. (2003). Need for recovery from work related fatigue and its role in the development and prediction of subjective health complaints. *Occupational and Environmental Medicine*, *60*(1), 62–70. https://doi.org/10.1136/oem.60.suppl_1.i62

Smith, L. G. E., Amiot, C. E., Smith, J. R., Callan, V. J., & Terry, D. J. (2013). The social validation and coping model of organizational identity development: A longitudinal test. *Journal of Management*, *39*(7), 1952–1978. https://doi.org/10.1177/0149206313488212

Soh, M., Zarola, A., Palaiou, K., & Furnham, A. (2016). Work-related well-being. *Health Psychology Open*, *3*(1), 1–11. https://doi.org/10.1177/2055102916628380

Steen, E., Næss, A. C., & Steen, P. A. (1997). Paramedics organizational culture and their care for relatives of cardiac arrest victims. *Resuscitation*, *34*(1), 57–63. https://doi.org/10.1016/S0300-9572(96)01045-3

Steers, R. M., & Rhodes, S. R. (1978). Major influences on employee attendance: A process model. *Journal of Applied Psychology*, *63*(4), 391–407. https://doi.org/10.1037/0021-9010.63.4.391

Stefanek, E., Strohmeier, D., Fandrem, H., & Spiel, C. (2012). Depressive symptoms in native and immigrant adolescents: The role of critical life events and daily hassles. *Anxiety, Stress, & Coping*, *25*(2), 201–217. https://doi.org/10.1080/10615806.2011.605879

Sterud, T., Hem, E., Ekeberg, O., & Lau, B. (2008). Occupational stressors and its organizational and individual correlates: A nationwide study of Norwegian ambulance personnel. *BMC Emergency Medicine*, *8*, 16–16. https://doi.org/10.1186/1471-227X-8-16

Sterud, T., Hem, E., Lau, B., & Ekeberg, Ø. (2011). A comparison of general and ambulance specific stressors: Predictors of job satisfaction and health problems in a nationwide one-year follow-up study of Norwegian ambulance personnel. *Journal of Occupational Medicine and Toxicology*, *6*(1), 10. https://doi.org/10.1186/1745-6673-6-10

Stilwell, J. A., & Stilwell, P. J. (1984). Sickness Absence in an Ambulance Service. *Occupational Medicine*, *34*(3), 96–99. https://doi.org/10.1093/occmed/34.3.96

Storm, V., Paech, J., Ziegelmann, J. P., & Lippke, S. (2016). Physical exercise, sickness absence and subjective employability: An 8-year longitudinal observational study among musculoskeletal patients. *Journal of Rehabilitation Medicine*, *48*(6), 541–546. https://doi.org/10.2340/16501977-2103

Strickland, C. M., & Patrick, C. J. (2015). Biomedical Model. In *The Encyclopedia of Clinical Psychology* (pp. 1–3). American Cancer Society. https://doi.org/10.1002/9781118625392.wbecp476

Subedi, D. (2016). Explanatory sequential mixed method design as the third research community of knowledge claim. *American Journal of Educational Research*, *4*(7), 570–577. https://doi.org/10.12691/education-4-7-10

Sulkowski, M. L., Dempsey, J., & Dempsey, A. G. (2011). Effects of stress and coping on binge eating in female college students. *Eating Behaviors*, *12*(3), 188–191. https://doi.org/10.1016/j.eatbeh.2011.04.006

Suri, H. (2011). Purposeful sampling in qualitative research synthesis. *Qualitative Research Journal*, *11*(2), 63–75. https://doi.org/10.3316/QRJ1102063

Svensson, A., & Fridlund, B. (2008). Experiences of and actions towards worries among ambulance nurses in their professional life: A critical incident study. *International Emergency Nursing*, *16*(1), 35–42. https://doi.org/10.1016/j.ienj.2007.10.002

Svensson, A. L., Strøyer, J., Ebbehøj, N. E., Schultz-Larsen, K., Marott, J. L., Mortensen, O. S., & Suadicani, P. (2009). Multidimensional intervention and sickness absence in assistant nursing students. *Occupational Medicine*, *59*(8), 563–569. https://doi.org/10.1093/occmed/kqp124

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Taloyan, M., Aronsson, G., Leineweber, C., Magnusson Hanson, L., Alexanderson, K., & Westerlund, H. (2012). Sickness presenteeism predicts suboptimal self-rated health and sickness absence: A nationally representative study of the Swedish working population. *PloS One*, *7*(9), e44721–e44721. https://doi.org/10.1371/journal.pone.0044721

Taris, T. W., & Schreurs, P. J. G. (2009). Well-being and organizational performance: An organizational-level test of the happy-productive worker hypothesis. *Work & Stress*, *23*(2), 120–136. https://doi.org/10.1080/02678370903072555

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, *2*, 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd

Taylor, J., & Lamaro Haintz, G. (2018). Influence of the social determinants of health on access to healthcare services among refugees in Australia. *Australian Journal of Primary Health*, *24*(1), 14–28. https://doi.org/10.1071/PY16147

Taylor, S. E. (2011). Social support: A review. In *The Oxford Handbook of Health Psychology* (pp. 189–214). Oxford University Press.

Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry*, *15*(1), 1–18. https://doi.org/10.1207/s15327965pli1501_01

Ten Brummelhuis, L. L., Ter Hoeven, C. L., de Jong, M. D. T., & Peper, B. (2013). Exploring the linkage between the home domain and absence from work: Health, motivation, or both? *Journal of Organizational Behavior*, *34*(3), 273–290. https://doi.org/10.1002/job.1789

Tenhiälä, A., Linna, A., von Bonsdorff, M., Pentti, J., Vahtera, J., Kivimäki, M., Elovainio, M., Guido, H., van der Heijden, B. I. J. M., Deller, J., & de Lange, A. H. (2013). Organizational justice, sickness absence and employee age. *Journal of Managerial Psychology*, *28*(7), 805–825. https://doi.org/10.1108/JMP-07-2013-0246

Textor, J., van der Zander, B., Gilthorpe, M. S., Liśkiewicz, M., & Ellison, G. T. (2017). Robust causal inference using directed acyclic graphs: The R package 'dagitty'. *International Journal of Epidemiology*, *45*(6), 1887–1894. https://doi.org/10.1093/ije/dyw341

Thayer, J. F., Verkuil, B., Brosschotj, J. F., Kevin, K., West, A., Sterling, C., Christie, I. C., Abernethy, D. R., Sollers, J. J., Cizza, G., Marques, A. H., & Sternberg, E. M. (2010). Effects of the physical work environment on physiological measures of stress. *European Journal of Cardiovascular Prevention & Rehabilitation*, *17*(4), 431–439. https://doi.org/10.1097/HJR.0b013e328336923a

Thorsen, S. V., Pedersen, J., Flyvhold, M., Kristiansen, J., Rugulies, R., & Bültmann, U. (2019). Perceived stress and sickenss absence: A prospective study of 17,795 employees in Denmark. *International Archives of Occupational and Environmental Health*, *92*(6), 821–828. https://doi.org/10.1007/s00420-019-01420-9

Thulesius, H. O., & Grahn, B. E. (2007). Reincentivizing – a new theory of work and work absence. *BMC Health Services Research*, *7*(1), 100–108. https://doi.org/10.1186/1472-6963-7-100

Tong, J. (2015). From person-environment misfit to job burnout: Theoretical extensions. *Journal of Managerial Psychology*, *30*(2), 169–182. https://doi.org/10.1108/JMP-12-2012-0404

Treweek, S., Lockhart, P., Pitkethly, M., Cook, J. A., Kjeldstrøm, M., Johansen, M., Taskila, T. K., Sullivan, F. M., Wilson, S., Jackson, C., Jones, R., & Mitchell, E. D. (2013). Methods to improve recruitment to randomised controlled trials: Cochrane systematic review and meta-analysis. *BMJ Open*, *3*(2), e002360. https://doi.org/10.1136/bmjopen-2012-002360

Trouillet, R., Doan-Van-Hay, L.-M., Launay, M., & Martin, S. (2011). Impact of age, and cognitive and coping resources on coping. *Canadian Journal on Aging*, *30*(4), 541–550. https://doi.org/10.1017/S0714980811000456

Trybou, J., Germonpre, S., Janssens, H., Casini, A., Braeckman, L., Bacquer, D. D., & Clays, E. (2014). Job-related stress and sickness absence among belgian nurses: A prospective study. *Journal of Nursing Scholarship*, *46*(4), 292–301. https://doi.org/10.1111/jnu.12075

Tsuboya, T., Aida, J., Osaka, K., & Kawachi, I. (2015). Working overtime and risk factors for coronary heart disease: A propensity score analysis based in the J-SHINE (Japanese Study of Stratification, Health, Income, and Neighborhood) study. *American Journal of Industrial Medicine*, *58*(2), 229–237. https://doi.org/10.1002/ajim.22409

Tuckett, A. G. (2005). Applying thematic analysis theory to practice: A researcher's experience. *Contemporary Nurse*, *19*(1–2), 75–87. https://doi.org/10.5172/conu.19.1-2.75

Turner, J., O'Cathain, A., Knowles, E., & Nicholl, J. (2013). Impact of the urgent care telephone service NHS 111 pilot sites: A controlled before and after study. *BMJ Open*, *3*(11), e003451. https://doi.org/10.1136/bmjopen-2013-003451

Tuttle, B. M., Giano, Z., & Merten, M. J. (2018). Stress spillover in policing and negative relationship functioning for law enforcement marriages. *The Family Journal*, *26*(2), 246–252. https://doi.org/10.1177/1066480718775739

Tveito, T. H., & Eriksen, H. R. (2009). Integrated health programme: A workplace randomized controlled trial. *Journal of Advanced Nursing*, *65*(1), 110–119. https://doi.org/10.1111/j.1365-2648.2008.04846.x

Van der Doef, M., & Maes, S. (1999). The Job Demand-Control (-Support) Model and psychological well-being: A review of 20 years of empirical research. *Work & Stress*, *13*(2), 87–114. https://doi.org/10.1080/026783799296084

van der Molen, H. F., Sluiter, J. K., Hulshof, C. T., Vink, P., & Frings-Dresen, M. H. (2005). Effectiveness of measures and implementation strategies in reducing physical

work demands due to manual handling at work. *Scandinavian Journal of Work, Environment & Health*, *2*, 75–87.

van Rhenen, W., Schaufeli, W. B., van Dijk, F. J. H., & Blonk, R. W. B. (2008). Coping and sickness absence. *International Archives of Occupational and Environmental Health*, *81*(4), 461–472. https://doi.org/10.1007/s00420-007-0238-4

van Schaaijk, A., Boschman, J. S., Frings-Dresen, M. H. W., & Sluiter, J. K. (2017). Appraisal of work ability in relation to job-specific health requirements in ambulance workers. *International Archives of Occupational and Environmental Health*, *90*(1), 123–131. https://doi.org/10.1007/s00420-016-1181-z

van Vianen, A. E. M. (2018). Person–Environment Fit: A review of its basic tenets. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*(1), 75–101. https://doi.org/10.1146/annurev-orgpsych-032117-104702

Veerkamp, P., Mousdicas, N., & Bednarek, R. (2016). Rosacea fulminans precipitated by acute stress: A case report describing an integrative approach for a patient reluctant to use isotretinoin. *Integrative Medicine: A Clinician's Journal*, *15*(6), 32–35.

Victor, C. R., Peacock, J. L., Chazot, C., Walsh, S., & Holmes, D. (1999). Who calls 999 and why? A survey of the emergency workload of the London Ambulance Service. *Journal of Accident & Emergency Medicine*, *16*(3), 174. https://doi.org/10.1136/emj.16.3.174

Vingård, E., Alexanderson, K., & Norlund, A. (2004). Chapter 9. Consequences of being on sick leave. *Scandinavian Journal of Public Health*, *32*(63), 207–215. https://doi.org/10.1080/14034950410021899

Virtanen, M., Kivimäki, M., Elovainio, M., Virtanen, P., & Vahtera, J. (2005). Local economy and sickness absence: Prospective cohort study. *Journal of Epidemiology and Community Health*, *59*(11), 973. https://doi.org/10.1136/jech.2005.036236

Visotsky, H. M., Hamburg, D. A., Goss, M. E., & Lebovits, B. Z. (1961). Coping behavior under extreme stress: Observations of patients with severe poliomyelitis. *Archives of General Psychiatry*, *5*(5), 423–448. https://doi.org/10.1001/archpsyc.1961.01710170001001

Vogel, R. M., & Feldman, D. C. (2009). Integrating the levels of person-environment fit: The roles of vocational fit and group fit. *Journal of Vocational Behavior*, *75*(1), 68–81. https://doi.org/10.1016/j.jvb.2009.03.007

Vogl, S. (2013). Telephone versus face-to-face interviews: Mode effect on semistructured interviews with children. *Sociological Methodology*, *43*(1), 133–177. https://doi.org/10.1177/0081175012465967

Wade, D. T., & Halligan, P. W. (2004). Do biomedical models of illness make for good healthcare systems? *BMJ*, *329*(7479), 1398–1401. PubMed. https://doi.org/10.1136/bmj.329.7479.1398

Wallace, D. J., Ray, K. N., Degan, A., Kurland, K., Angus, D. C., & Malinow, A. (2018). Transportation characteristics associated with non-arrivals to paediatric clinic appointments: A retrospective analysis of 51 580 scheduled visits. *BMJ Quality & Safety*, *27*(6), 437. https://doi.org/10.1136/bmjqs-2017-007168

Wang, L. D., Lam, W. W. T., Wu, J., & Fielding, R. (2015). Psychosocial determinants of Chinese parental HPV vaccination intention for adolescent girls: Preventing cervical cancer. *Psycho-Oncology*, *24*(10), 1233–1240. https://doi.org/10.1002/pon.3859

Wang, S., Moss, J. R., & Hiller, J. E. (2006). Applicability and transferability of interventions in evidence-based public health. *Health Promotion International*, *21*(1), 76–83. https://doi.org/10.1093/heapro/dai025

Wankhade, P. (2011). Performance measurement and the UK emergency ambulance service: Unintended consequences of the ambulance response time targets. *International Journal of Public Sector Management*, *24*(5), 384–402. https://doi.org/10.1108/09513551111147132

Wankhade, P. (2012). Different cultures of management and their relationships with organizational performance: Evidence from the UK ambulance service. *Public Money & Management*, *32*(5), 381–388. https://doi.org/10.1080/09540962.2012.676312

Wankhade, P. (2016). Staff perceptions and changing role of pre-hospital profession in the UK ambulance services: An exploratory study. *International Journal of Emergency Services*, *5*(2), 126–144. https://doi.org/10.1108/IJES-02-2016-0004

Wankhade, P., & Brinkman, J. (2014). The negative consequences of culture change management; Evidence from a UK NHS ambulance service. *International Journal of Public Sector Management*, *27*(1), 2–25. https://doi.org/10.1108/IJPSM-05-2012-0058

Wankhade, P., McCann, L., & Murphy, P. (2019). *Critical Perspectives on the Management and Organization of Emergency Services* (1st Edition). Routledge.

Ward, K., Gott, M., & Hoare, K. (2015). Participants' views of telephone interviews within a grounded theory study. *Journal of Advanced Nursing*, *71*(12), 2775–2785. https://doi.org/10.1111/jan.12748

Warraich, S., Swales, C., & O'Leary, D. (2017). Thoughts of being an imposter in medical students. *The Clinical Teacher*, *14*(6), 454–455. https://doi.org/10.1111/tct.12668

Watson, S. B., Goh, Y. W., & Sawang, S. (2011). Gender influences on the work-related stress-coping process. *Journal of Individual Differences*, *32*(1), 39–46. https://doi.org/10.1027/1614-0001/a000033

Webster, R. K., Liu, R., Karimullina, K., Hall, I., Amlôt, R., & Rubin, G. J. (2019). A systematic review of infectious illness Presenteeism: Prevalence, reasons and risk factors. *BMC Public Health*, *19*(1), 799. https://doi.org/10.1186/s12889-019-7138-x

Weilenmann, S., Schnyder, U., Parkinson, B., Corda, C., von Känel, R., & Pfaltz, M. C. (2018). Emotion transfer, emotion regulation, and empathy-related processes in physician-patient interactions and their association with physician well-being: A theoretical model. *Frontiers in Psychiatry*, *9*, 389–389. https://doi.org/10.3389/fpsyt.2018.00389

Weingarten, S., Staniloff, H., Ault, M., Miles, P., Bamberger, M., & Meyer, R. D. (1988). Do hospital employees benefit from the influenza vaccine? *Journal of General Internal Medicine*, *3*(1), 32–37. https://doi.org/10.1007/BF02595754

Weir, R., Stewart, L., Browne, G., Roberts, J., Gafni, A., Easton, S., & Seymour, L. (1997). The efficacy and effectiveness of process consultation in improving staff morale and absenteeism. *Medical Care*, *35*(4), 334–353.

Weiss, D. S., Brunet, A., Best, S. R., Metzler, T. J., Liberman, A., Pole, N., Fagan, J. A., & Marmar, C. R. (2010). Frequency and severity approaches to indexing exposure to trauma: The Critical Incident History Questionnaire for police officers. *Journal of Traumatic Stress*, *23*(6), 734–743. https://doi.org/10.1002/jts.20576

Wells, C. L. (2017). Understanding issues of control in top-down management pedagogies. *Power and Education*, *9*(3), 192–201. https://doi.org/10.1177/1757743817737334

Whybrow, D., Jones, N., & Greenberg, N. (2015). Promoting organizational well-being: A comprehensive review of Trauma Risk Management. *Occupational Medicine*, *65*(4), 331–336. https://doi.org/10.1093/occmed/kqv024

Widmer, P. S., Semmer, N. K., Kälin, W., Jacobshagen, N., & Meier, L. L. (2012). The ambivalence of challenge stressors: Time pressure associated with both negative and positive well-being. *Journal of Vocational Behavior*, *80*(2), 422–433. https://doi.org/10.1016/j.jvb.2011.09.006

Wiitavaara, B., Lundman, B., Barnekow-Bergkvist, M., & Brulin, C. (2007). Striking a balance—Health experiences of male ambulance personnel with musculoskeletal symptoms: A grounded theory. *International Journal of Nursing Studies*, *44*(5), 770–779. https://doi.org/10.1016/j.ijnurstu.2006.02.007

Wilde, J. A., McMillan, J. A., Serwint, J., Butta, J., O'Riordan, M. A., & Steinhoff, M. C. (1999). Effectiveness of influenza vaccine in health care professionals: A randomized trial. *JAMA*, *281*(10), 908–913. https://doi.org/10.1001/jama.281.10.908

Williams, A. (2013). The strategies used to deal with emotion work in student paramedic practice. *Nurse Education in Practice*, *13*(3), 207–212. https://doi.org/10.1016/j.nepr.2012.09.010

Willinger, U., Hergovich, A., Schmoeger, M., Deckert, M., Stoettner, S., Bunda, I., Witting, A., Seidler, M., Moser, R., Kacena, S., Jaeckle, D., Loader, B., Mueller, C., & Auff, E. (2017). Cognitive and emotional demands of black humour processing: The role of intelligence, aggressiveness and mood. *Cognitive Processing*, *18*(2), 159–167. https://doi.org/10.1007/s10339-016-0789-y

Wynia, M. K., Coughlin, S. S., Alpert, S., Cummins, D. S., & Emanuel, L. L. (2001). Shared expectations for protection of identifiable health care information: Report of a national consensus process. *Journal of General Internal Medicine*, *16*(2), 100–111. https://doi.org/10.1111/j.1525-1497.2001.00515.x

Yang, S., & Berdine, G. (2015). Negative binomial regression. *The Southwest Respiratory and Critical Care Chronicles*, *3*(10), 50–53.

Yerkes, R. M., & Dodson, J. D. (1908). The relation of strength of stimulus to rapidity of habit-formation. *Journal of Comparative Neurology and Psychology*, *18*(5), 459–482. https://doi.org/10.1002/cne.920180503

Young, K. M., & Cooper, C. (1995). Occupational stress in the ambulance service: A diagnostic study. *Journal of Managerial Psychology*, *10*(3), 29–36. https://doi.org/10.1108/02683949510081356

Zapf, D., Seifert, C., Schmutte, B., Mertini, H., & Holz, M. (2001). Emotion work and job stressors and their effects on burnout. *Psychology & Health*, *16*(5), 527–545. https://doi.org/10.1080/08870440108405525

Appendices

Appendix A: Permissions from journal editor reproduce sections of journal article in thesis

Dear Laura,

Thank you for your email.

In answer to your question, Emerald allows its authors to include a published version of their article within their written thesis/dissertation.

If your Institution requires you to deposit an electronic copy, upon official publication, Emerald allows its authors to place the pre or post-print version (aka the 'Submitted version under review' or 'Author Accepted Manuscript') of your article within your current institution's website. By this we mean that while it can have all of the Editorial changes, it must be in a different format – i.e. different font, different layout, etc. and must not have any Emerald logos or branding. We also ask that you include the DOI of the article.

We request that the following statement appears on each page;

'This article is © Emerald Publishing and permission has been granted for this version to appear here (please insert the web address here). Emerald does not grant permission for this article to be further copied/distributed or hosted elsewhere without the express permission from Emerald Group Publishing Limited.'

If the article will not be published prior to your dissertation being printed, we would request that you state the article is 'forthcoming in ***…'.

If possible, we would request that the article is not deposited online prior to official publication by Emerald- if this is likely, please request an embargo period to ensure that Emerald has first publication.

Kind Regards,

Chris Tutill
Publisher | Emerald Publishing
Tel: +44 (0) 1274 785173 | Fax: +44 (0)1274 785200
CTutill@emeraldinsight.com| www.emeraldinsight.com

Appendix B: Modified Cochrane Collaboration's data collection form

DATA COLLECTION FORM

Interventions to reduce sickness absence in the healthcare population: a systematic review

Notes on using data extraction form:

- Be consistent in the order and style you use to describe the information for each report.
- Record any missing information as unclear or not described, to make it clear that the information was not found in the study report(s), not that you forgot to extract it.
- Include any instructions and decision rules on the data collection form, or in an accompanying document. It is important to practice using the form and give training to any other authors using the form.

Study title	
Study ID *(surname of first author and year first full report of study was published e.g. Smith 2001)*	

General information

Date form completed ***(dd/mm/yyyy)***	
Name/ID of person extracting data	
Reference	
Study author contact details	
Publication type *(e.g. conference, article, report)*	

Notes:

Study eligibility

Study Characteristics	Review Inclusion Criteria	Yes/ No / Unclear	Location in text *(pg & ¶/fig/table)*
Type of study	Randomised trial		
	Non-randomised trial		
	Controlled before-after study • Contemporaneous data collection • At least 2 intervention and 2 control clusters		
	Interrupted time series OR Repeated measures study • At least 3 timepoints before and 3 after the intervention • Clearly defined intervention point		
	Cross-sectional design		
	Longitudinal design		
	Other (please specify):		
Participants	Healthcare workers who are employed in any care-occupation. These can include doctors, nurses, care staff.		
Types of intervention	All types of intervention		

Study Characteristics	Review Inclusion Criteria	Yes/ No / Unclear	Location in text *(pg & ¶/fig/table)*
Types of outcome measures	Primary outcome Sickness absence **Secondary outcomes** Adherence to protocol Cost-effectiveness Acceptability		
INCLUDE EXCLUDE			
Reason for exclusion			
Notes:			

DO NOT PROCEED IF STUDY EXCLUDED FROM REVIEW

Characteristics of included studies

Methods

	Descriptions as stated in report/paper *Include comparative information for each group (i.e. intervention and controls) if available*	**Location in text or source** *(pg & ¶/fig/table/other)*
Aim of study *(e.g. efficacy, equivalence, pragmatic)*		
Design *(e.g. parallel, crossover, non-RCT)*		
Unit of allocation *(by individuals, cluster/ groups or body parts)*		
Length/duration of intervention		
Notes:		

Participants

	Descriptions as stated in report/paper *Include comparative information for each group (i.e. intervention and controls) if available*	**Location in text or source** *(pg & ¶/fig/table/other)*
Population description *(from which study participants are drawn)*		
Setting *(including location and social context)*		
Baseline measures (*duration of sickness absence or number of days off sick*)		
Inclusion criteria		
Exclusion criteria		
Method of recruitment of participants *(e.g. phone, mail, clinic patients)*		
Total no. randomised *(or total pop. at start of study for NRCTs)*		
Clusters *(if applicable, no., type, no. people per cluster)*		
Baseline imbalances		
Withdrawals and exclusions *(if not provided below by outcome)*		
Age		
Sex		
Race/Ethnicity		
Co-morbidities		
Other relevant socio-demographics		
Subgroups measure		
Subgroups reported		
Notes:		

Intervention groups

Copy and paste table for each intervention and comparison group

Intervention group 1

	Description as stated in report/paper	Location in text or source *(pg & ¶/fig/table/other)*
Group name		
No. randomised to group *(specify whether no. people or clusters)*		
Theoretical basis *(include key references)*		
Description *(include sufficient detail for replication, e.g. content, dose, components)*		
Duration of treatment period		
Timing *(e.g. frequency, duration of each episode)*		
Delivery *(e.g. mechanism, medium, intensity, fidelity)*		
Providers *(e.g. no., profession, training, ethnicity etc. if relevant)*		
Co-interventions		
Economic information *(i.e. intervention cost, changes in other costs as result of intervention)*		
Resource requirements *(e.g. staff numbers, cold chain, equipment)*		
Adherence rate *(did participants complete the intervention? Did they stick to it?)*		
Integrity of delivery *(was the intervention conducted according to plan/protocol?)*		
Compliance *(abide by recommendations of a doctor or other health care provider or study investigator)*		
Notes:		

Control group 1

	Description as stated in report/paper	Location in text or source *(pg & ¶/fig/table/other)*
Group name		
No. randomised to group *(specify whether no. people or clusters)*		
Theoretical basis *(include key references)*		
Description *(include sufficient detail for replication, e.g. content, dose, components)*		
Duration of treatment period		
Timing *(e.g. frequency, duration of each episode)*		
Delivery *(e.g. mechanism, medium, intensity, fidelity)*		
Providers *(e.g. no., profession, training, ethnicity etc. if relevant)*		
Co-interventions		
Economic information *(i.e. intervention cost, changes in other costs as result of intervention)*		
Resource requirements *(e.g. staff numbers, cold chain, equipment)*		
Adherence rate *(did participants complete the intervention? Did they stick to it?)*		
Integrity of delivery *(was the intervention conducted according to plan/protocol?)*		

Compliance *(abide by recommendations of a doctor or other health care provider or study investigator)*		
Notes:		

Outcomes

Copy and paste table for each intervention and comparison group

	Description as stated in report/paper		**Location in text or source** *(pg & ¶/fig/table/other)*
Outcome name			
Time points measured *(specify whether from start or end of intervention)*			
Time points reported			
Outcome definition *(with diagnostic criteria if relevant)*			
Person measuring/ reporting			
Unit of measurement *(e.g. hours/days/weeks/months or number of absences)*			
Scales: upper and lower limits *(indicate whether high or low score is good)*			
Is outcome/tool validated? *(yes/no/unclear)*			
Imputation of missing data *(e.g. assumptions made for ITT analysis)*			
Assumed risk estimate *(e.g. baseline or population risk noted in Background)*			
Power *(e.g. power & sample size calculation, level of power achieved)*			

Notes:

Data and analysis

Copy and paste the appropriate table for each outcome, including additional tables for each time point and subgroup as required.

For RCT/CCT

Continuous outcome

	Description as stated in report/paper						**Location in text or source** *(pg & ¶/fig/table/other)*
Comparison							
Outcome							
Time point *(specify from start or end of intervention)*							
Results	Intervention			Comparison			
	Mean	SD *(or other variance, specify)*	No. participants	Mean	SD *(or other variance, specify)*	No. participants	
Notes:							

	Description as stated in report/paper						**Location in text or source** *(pg & ¶/fig/table/other)*
Comparison							
Outcome							
Time point *(specify from start or end of intervention)*							
Results	Intervention			Comparison			
	Mean	SD *(or other variance, specify)*	No. participants	Mean	SD *(or other variance, specify)*	No. participants	
Another other reported information:							
Notes:							

Risk of bias (RCT's)

Domain	**Risk of bias** *Low/ High/Unclear*	**Support for judgement** *(include direct quotes where available with explanatory comments)*	**Location in text** *(pg & ¶/fig/table)*
Random sequence generation *(selection bias)*			
Allocation concealment *(selection bias)*			
Blinding of participants and personnel *(performance bias)*			
Blinding of outcome assessment *(detection bias)*			
Incomplete outcome data *(attrition bias)*			
Selective outcome reporting? *(reporting bias)*			
Other bias			
Notes:			

Other information

	Description as stated in report/paper	**Location in text or source** *(pg & ¶/fig/table/other)*
Key conclusions of study authors		
References to other relevant studies		
Correspondence required for further study information *(from whom, what and when)*		
Notes:		

Appendix C: Ethical approval from University of Lincoln School of Health and Social Care Ethics Committee, Health Research Authority (HRA) and capability and capacity to host research

UNIVERSITY OF LINCOLN

15 August 2017

Laura Simmons
School of Health and Social Care

Dear Laura,

Thank you very much for taking the time to come and see me in order to discuss your application to the School Ethics Committee. I note that you have now gained approval to proceed with your study from HRA and that you have also made a number of adjustments to your application to the School following feedback from us.

Specifically, I confirm that you have:

- Revised EA2 form with the following addressed:
  - Anonymity and confidentiality: I have now stated that participants will be able to create their own unique identifier that is personal to them to ensure their identity is protected
  - I have added a section entitled recruitment of participants where I have clarified how I will gain sample
  - I have added additional information in the informed consent section stating how the participants will be presented with a pack containing the recruitment email (information about the research), the participant information sheet and the consent form
  - I have added a section that provides information on the length of participation for participants
  - I have included further information on how participants are able to withdraw from the study
  - There is now further information on why data will be kept for 5 years
- Updated participant information sheets and consent forms

Thank you too, for sending a copy of your IRAS submission and HRA approval letter.

I confirm that the School Ethics Committee approves your study and we wish you well with your work. It promises to be an interesting study and we very much look forward to hearing more about it as your work progresses.

If you have any queries at any time, please do not hesitate to contact me.

Yours sincerely,

Mo Ray
Chair of the School of Health and Social Care Ethics Committee

School of Health and Social Care

College of Social Science University of Lincoln Brayford Pool Lincoln LN6 7TS United Kingdom
www.lincoln.ac.uk T +44 (0)1522 882000

and further information about working with the research management function for each organisation can be accessed from www.hra.nhs.uk/hra-approval.

Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

After HRA Approval

The attached document *"After HRA Approval – guidance for sponsors and investigators"* gives detailed guidance on reporting expectations for studies with HRA Approval, including:

- Working with organisations hosting the research
- Registration of Research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics and is updated in the light of changes in reporting expectations or procedures.

Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found at http://www.hra.nhs.uk/resources/applying-for-reviews/nhs-hsc-rd-review/.

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/.

HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

Your IRAS project ID is **216506**. Please quote this on all correspondence.

NHS
Health Research Authority

Miss Laura Simmons
PhD Student
University of Lincoln
Brayford Pool
Lincoln
LN6 7TS

Email: hra.approval@nhs.net

24 July 2017

Dear Miss Simmons,

Letter of HRA Approval

Study title:	**Stress as a cause of sickness absence in the ambulance service**
IRAS project ID:	**216506**
Sponsor	**University of Lincoln**

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. **Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.

It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details

IRAS project ID	216506

Yours sincerely

Kevin Ahmed
Assessor

Telephone: 0207 104 8171
Email: hra.approval@nhs.net

Dear Laura

RE: IRAS 216506. Confirmation of Capacity and Capability at [redacted]

Full Study Title: Stress as a cause of sickness absence in the ambulance service

This email confirms that [redacted] has the capacity and capability to deliver the above referenced study. Please find attached agreed Statement of Activities as confirmation.

Outstanding documents
Permission is only granted once copies of your GCP certificate, amended information sheet and consent form along with the amendment notification documents have all been received.

Monitoring and Auditing
Please note that the [redacted] is required to monitor research to ensure compliance with the Research Governance Framework and other legal and regulatory requirements. This is achieved by random audit of research. You are required to comply with the Trust's monitoring arrangements. You should also ensure that you send copies of any interim and final reports to the Research Department.

Kind regards

Tanya

Appendix D: Participant information sheet and consent form for quantitative phase

PARTICIPANT INFORMATION SHEET
Version 4, 6/04/2018

What is the purpose of the study?

People employed in the ambulance service have higher levels of sickness related leave compared to other occupations within the National Health Service (NHS). We are attempting to understand why this is.

Do I have to take part?

You are able to choose whether you would like to take part or not. If at any point during the study you decide you no longer want to participate you are free to withdraw at any time, without giving any reason, and without your employment and/or legal rights being affected. If you do decide to withdraw, then the information collected so far cannot be erased and this information may still be used in the project analysis.

What will I have to do?

You will be invited to fill in a questionnaire asking for information about your job role, coping mechanisms, job stress, daily stress and history of sickness absence. After this, you may be invited to take part in a semi-structured interview where you will be asked questions about your experiences and perceptions of sick leave.

What are the possible disadvantages and risks of taking part?

We would like you to be honest and open about your experiences and perceptions of sick leave, which may mean you reveal information that you do not want your employer to know or that could potentially require action by the researcher. This will only happen in exceptional circumstances, for example, if you reveal information that could suggest to the researcher that your safety is at risk.

You can be assured that none of your identifiable information (such as your name and job title) and your personal data (such as the data from the questionnaire) will be shared with your employer or any third party. However, if requested, your employer and other participants (including yourself) will be able to receive the final version of the thesis or a research summary.

What are the benefits of taking part?

You will not directly benefit from taking part in this research however, you will be contributing to a study that may help the future of the ambulance service.

What will happen to the information I provide?

Only the researcher will have access to any information you provide. All physical copies of questionnaires will be kept in a locked filing cabinet that only the researcher has access to. Electronic copies will be kept on a password-protected computer that only the researcher has access to. Data will be kept for 5 years.

What if there is a problem?

If you encounter a problem at any stage of the research you can contact the researcher (Laura Simmons) or the Director of Studies (details provided at the end of this sheet) who will be happy to assist you. If you would like to speak to an individual who is independent to this research, please contact the Chair of the School Ethics Committee (details provided at the end of this sheet). If you require further support, please contact your GP.

What if I don't want to carry on with the study?

You may withdraw from the study at <u>any point</u> without giving any reason, and without your employment and/or legal rights being affected. If you do decide to withdraw, then the information collected so far cannot be erased and this information may still be used in the project analysis. Please inform the researcher by phone or email if you would like to withdraw.

What will happen to the results of the research study?

The results of the study will be submitted as part of a PhD thesis that will also be published in a relevant academic journal and be presented at a variety of academic conferences.

Further information and contact details

If you require any further information, please contact the researcher or Director of Studies on the contact details below.

Complaints can be directed to the Chair of the School Ethics Committee:

Professor Mo Ray
University of Lincoln,
Brayford Pool, LN6 7TS

Email
mray@lincoln.ac.uk

Phone
01522 886289

Researcher
Laura Simmons

Address
Lincoln Institute for Health,
University of Lincoln,
Brayford Pool, LN6 7TS

Email
lsimmons@lincoln.ac.uk

Phone
01522 835468

Director of Studies
Professor Niro Siriwardena

Address
Community and Health Research Unit
University of Lincoln,
Brayford Pool, LN6 7TS

Email
nsiriwardena@lincoln.ac.uk

Phone
01522 886939

CONSENT FORM

	YES	
• I confirm that I have read the information sheet dated 6.04.2018 (version 4) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily	☐	☐
• I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my employment or legal rights being affected. I understand that should I withdraw then the information collected so far cannot be erased and that this information may still be used in the project analysis	☐	☐
• I understand that a final copy of the research will be provided to the ambulance service	☐	☐
• I understand that I am able to request a final copy of the research if required	☐	☐
• I consent to being contacted for a follow-up semi-structured interview conducted via telephone If you consent to being contacted for a follow-up semi-structured interview please leave a phone number or email address that the researcher can contact you on:	☐	☐
• I agree to take part in the study	☐	☐

……..	…….	……..
NAME OF PARTICIPANT	**DATE**	**SIGNATURE**
……..	…….	……..
NAME OF RESEARCHER	**DATE**	**SIGNATURE**

Please retain a copy of this consent form for your records. An additional copy will be held at the University of Lincoln in a secure location for the duration of the study.

Appendix E: Participant information sheet and consent form for qualitative phase

PARTICIPANT INFORMATION SHEET
Version 4, 6.04.2018

What is the purpose of the study?

People employed in the ambulance service have higher levels of sickness related leave compared to other occupations within the National Health Service (NHS). We are attempting to understand why this is.

Do I have to take part?

You are able to choose whether you would like to take part or not. If at any point during the study you decide you no longer want to participate you are free to withdraw at any time, without giving any reason, and without your employment and/or legal rights being affected. If you do decide to withdraw, then the information collected so far cannot be erased and this information may still be used in the project analysis.

What will I have to do?

You will be invited to take part in a telephone or face-to face interview that will last approximately 1 hour and 30 minutes. You will be able to choose if you would like to take part in the interview via telephone or face-to-face. You will be able to discuss your preference for interview with the researcher. You will be asked questions about your experiences and perceptions of sick leave.

All of the interviews will be audio recorded so that the researcher can transcribe the conversations. With your consent, anonymised quotes may be used within the main body of the dissertation.

What are the possible disadvantages and risks of taking part?

We would like you to be honest and open about your experiences and perceptions of sick leave, which may mean you reveal information that you do not want your employer to know or that could potentially require action by the researcher. This will only happen in exceptional circumstances, for example, if you reveal information that could suggest to the researcher that your safety is at risk.

You can be assured that none of your identifiable information (such as your name and job title) will be shared with your employer or any other third party. However, if requested, your employer and other participants (including yourself) will be able to receive the final version of the thesis or a research summary.

What are the benefits of taking part?

You will not directly benefit from taking part in this research however, you will be contributing to a study that may help the future of the ambulance service.

What will happen to the information I provide?

Only the researcher will have access to any information you provide. All physical copies of interview transcripts and audio files will be kept in a locked filing cabinet that only the researcher has access to. Electronic copies will be kept on a password-protected computer that only the researcher has access to. Data will be kept for 5 years. With your consent, anonymised verbatim quotes will also be used in the write-up of the study.

What if there is a problem?

If you encounter a problem at any stage of the research you can contact the researcher (Laura Simmons) or the Director of Studies (details provided at the end of this sheet) who will be happy to assist you. If you would like to speak to an individual who is independent to this research, please contact the Chair of the School Ethics Committee (details provided at the end of this sheet). If you require further support, please contact your GP.

What if I don't want to carry on with the study?

You may withdraw from the study at <u>any point</u> without giving any reason, and without your employment and/or legal rights being affected. If you do decide to withdraw, then the information collected so far cannot be erased and this information may still be used in the project analysis. Please inform the researcher by phone or email if you would like to withdraw.

What will happen to the results of the research study?

The results of the study will be submitted as part of a PhD thesis that will also be published in a relevant academic journal and be presented at a variety of academic conferences.

Further information and contact details

If you require any further information, please contact the researcher or Director of Studies on the contact details below.

Researcher
Laura Simmons

Address
Lincoln Institute for Health,
University of Lincoln,
Brayford Pool, LN6 7TS

Email
lsimmons@lincoln.ac.uk

Phone
01522 835468

Director of Studies
Professor Niro Siriwardena

Address
Community and Health Research Unit
University of Lincoln,
Brayford Pool, LN6 7TS

Email
nsiriwardena@lincoln.ac.uk

Phone
01522 886939

Complaints can be directed to the Chair of the School Ethics Committee:

Professor Mo Ray
University of Lincoln,
Brayford Pool, LN6 7TS

Email
mray@lincoln.ac.uk

Phone
01522 886289

CONSENT FORM **YES**

- I confirm that I have read the information sheet dated 6.04.2018 (version 4) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily ☐ ☐
- I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my employment or legal rights being affected. I understand that should I withdraw then the information collected so far cannot be erased and that this information may still be used in the project analysis ☐ ☐
- I consent to the use of audio taping during the interview ☐ ☐
- I understand that anonymised verbatim quotations may be used within the write up on the research report ☐ ☐
- I understand that a final copy of the research will be provided to the ambulance service ☐ ☐
- I understand that I am able to request a final copy of the research if required ☐ ☐
- I consent to taking part in a semi-structured telephone interview ☐ ☐

……...	…….	……..
NAME OF PARTICIPANT	**DATE**	**SIGNATURE**
……..	…….	……...
NAME OF RESEARCHER	**DATE**	**SIGNATURE**

Please retain a copy of this consent form for your records. An additional copy will be held at the University of Lincoln in a secure location for the duration of the study.

Appendix F: Participant recruitment methods (email, newsletter, crew room poster and social media)

Study on stress-related sickness absence in the ambulance service

We are interested in finding out **more about stress-related sickness absence** within the ambulance service. In particular, we are interested in job stress and coping styles.

What does this study involve?

- You will complete a questionnaire asking you questions about job stress, coping styles and your history of sickness absence
- You may also be contacted to take part in an interview conducted via telephone

If you are a **full-time** employee of the ambulance service and would like more information on how take part contact Laura Simmons (lsimmons@lincoln.ac.uk) or call 01522 835468.

Alternatively, you can access the participant information sheet, consent form and questionnaire through the following link:
https://www.esurveycreator.co.uk/s/sicknessabsenceintheambulanceservice

UNIVERSITY OF LINCOLN
LINCOLN INSTITUTE FOR HEALTH

Study on stress-related sickness absence in the ambulance service

We are interested in finding out **more about stress-related sickness absence** within the ambulance service. In particular, we are interested in job stress and coping styles.

What does this study involve?

- You will complete a questionnaire asking you questions about job stress, coping styles and your history of sickness absence
- You may also be contacted to take part in an interview conducted via telephone

Interested in taking part?

If you are a **full-time** employee of the ambulance service and would like more information on how take part contact Laura Simmons (**lsimmons@lincoln.ac.uk**) or call 01522 835468.

This study has been approved by the University of Lincoln ethics committee and has received HRA approval.

Appendix G: Demographic questionnaire

Demographics

1. What is your sex?
   Female
   Male
   Prefer not to disclose

2. What is your age?

3. What ambulance service do you currently work for?
   East Midlands Ambulance Service
   East of England Ambulance Service
   London Ambulance Service
   North East Ambulance Service
   North West Ambulance Service
   South Central Ambulance Service
   South East Coast Ambulance Service
   South Western Ambulance Service
   West Midlands Ambulance Service
   Yorkshire Ambulance Service

Appendix H: NIOSH Job Stress Questionnaire

General job information

1. How long have you worked for your present employer?

Years
Months

2. What is your current job title?

3. How long have you worked in this job?
   Years
   Months

4. Please circle the most appropriate description of your situation:
   Full-time permanent employee
   Full-time temporary employee
   Part-time permanent employee
   Casual
   Other (specify)

5. Circle the description that comes closest to the present work shift:
   Rotating eight-hour shift
   Rotating twelve-hour shift
   Permanent day shift
   Permanent night shift
   Other (specify)

6. How long have you worked the shift you circled above?
   Years
   Month

7. If you work on a rotating shift, what rotation pattern do you follow?
   1. Day to evening to night
   2. Night to evening to day
   3. No set pattern
   4. Day to night
   5. Night to day
   6. Not applicable
   7. Other (please specify)

8. How many times a week do you change shifts?
   0 – I don't change
   2 – 2-times
   3 - More than 2-times
   4 – Other (specify)

9. How many hours do you normally work per week in your job (not counting overtime)?
   Hours

10. How many hours overtime do you work in your job in an average week?
    Hours

11. How many hours per week do you work on any other job?
    Hours (please mark '0' if no other job)

Health conditions

Within the past twelve months, have a doctor ever treated you for, or told you that you had: Please enter 1 = No and 2= Yes in the space provided at the end of each condition.

1. Diabetes
   1 = No
   2 = Yes
2. Cancer
   1 = No
   2 = Yes
3. Hernia or rupture
   1 = No
   2 = Yes
4. Tuberculosis
   1 = No
   2 = Yes
5. Asthma
   1 = No
   2 = Yes
6. High blood pressure
   1 = No
   2 = Yes
7. Heart disease
   1 = No
   2 = Yes
8. Arthritis
   1 = No
   2 = Yes
9. Epilepsy
   1 = No
   2 = Yes
10. Glaucoma
    1 = No
    2 = Yes
11. Paralysis, tremor, or shaking
    1 = No
    2 = Yes
12. Kidney or bladder trouble
    1 = No
    2 = Yes
13. Lung or breathing problems
    1 = No
    2 = Yes
14. Stroke
    1 = No
    2 = Yes
15. Anemia
    1 = No
    2 = Yes

16. Gall bladder, liver or pancreas
    1 = No
    2 = Yes
17. Thyroid or goiter
    1 = No
    2 = Yes
18. Insomnia
    1 = No
    2 = Yes
19. Gastritis
    1 = No
    2 = Yes
20. Colitis
    1 = No
    2 = Yes
21. Stomach ulcer
    1 = No
    2 = Yes
22. Alcoholism
    1 = No
    2 = Yes
23. Emotional problems
    1 = No
    2 = Yes
24. Back problems
    1 = No
    2 = Yes

Control scale

The next series of questions asks how much influence you now have in each of several areas. By influence we mean the degree to which you control what is done by others at work and have freedom to determine what you do yourself at work.

1. How much influence do you have over the variety of tasks you perform?
    1. Very little
    2. Little
    3. A moderate amount
    4. Much
    5. Very much

2. How much influence do you have over the availability of supplies and equipment you need to do your work?
    1. Very little
    2. Little
    3. A moderate amount
    4. Much
    5. Very much

3. How much influence do you have over the order in which you perform tasks at work?
    1. Very little
    2. Little

3. A moderate amount
4. Much
5. Very much

4. How much influence do you have over the amount of work you do?
   1. Very little
   2. Little
   3. A moderate amount
   4. Much
   5. Very much

5. How much influence do you have over the pace of your work, that is how fast or slow you work?
   1. Very little
   2. Little
   3. A moderate amount
   4. Much
   5. Very much

6. How much influence do you have over the quality of the work that you do?
   1. Very little
   2. Little
   3. A moderate amount
   4. Much
   5. Very much

7. How much influence do you have over the arrangement and decoration of your work area?
   1. Very little
   2. Little
   3. A moderate amount
   4. Much
   5. Very much

8. How much influence do you have over the decisions concerning which individuals you work unit do which tasks?
   1. Very little
   2. Little
   3. A moderate amount
   4. Much
   5. Very much

9. How much influence do you have over the hours or schedule that you work?
   1. Very little
   2. Little
   3. A moderate amount
   4. Much
   5. Very much

10. How much influence do you have over the decisions as to when things will be done in your work unit?
    1. Very little

2. Little
3. A moderate amount
4. Much
5. Very much

11. How much do you influence the policies, procedures and performance in your unit?
    1. Very little
    2. Little
    3. A moderate amount
    4. Much
    5. Very much

12. How much influence do you have over the availability of materials you need to do your work?
    1. Very little
    2. Little
    3. A moderate amount
    4. Much
    5. Very much

13. How much influence do you have over the training of other workers in your unit?
    1. Very little
    2. Little
    3. A moderate amount
    4. Much
    5. Very much

14. How much influence do you have over the arrangement of furniture and other work equipment in your unit?
    1. Very little
    2. Little
    3. A moderate amount
    4. Much
    5. Very much

15. To what extent can you do your work ahead and take a short rest break during work hours?
    1. Very little
    2. Little
    3. A moderate amount
    4. Much
    5. Very much

16. In general, how much influence do you have over work and work-related factors?
    1. Very little
    2. Little
    3. A moderate amount
    4. Much
    5. Very much

Social support

1. How much does your immediate supervisor (boss) go out of his/her way to do things to make your work life easier for you?
   1. Don’t have any such person
   2. Not at all
   3. A little
   4. Somewhat
   5. Very much

2. How much do other people at work go out of their way to do things to make your work life easier for you?
   1. Don’t have any such person
   2. Not at all
   3. A little
   4. Somewhat
   5. Very much

3. How much do your spouse, friends and relatives go out of their way to make your work life easier for you?
   1. Don’t have any such person
   2. Not at all
   3. A little
   4. Somewhat
   5. Very much

4. How easy is it to talk with your immediate supervisor (boss)?
   1. Don’t have any such person
   2. Not at all
   3. A little
   4. Somewhat
   5. Very much

5. How easy is it to talk to other people at work?
   1. Don’t have any such person
   2. Not at all
   3. A little
   4. Somewhat
   5. Very much

6. How easy is it to talk with your spouse, friends and relatives?
   1. Don’t have any such person
   2. Not at all
   3. A little
   4. Somewhat
   5. Very much

7. How much can your immediate supervisor (boss) be replied on when things get tough at work?
   1. Don’t have any such person
   2. Not at all
   3. A little
   4. Somewhat
   5. Very much

8. How much can other people at work be relied on when things get tough at work?
    1. Don’t have any such person
    2. Not at all
    3. A little
    4. Somewhat
    5. Very much

9. How much can your spouse, friends, and relatives be replied on when things get tough at work?
    1. Don’t have any such person
    2. Not at all
    3. A little
    4. Somewhat
    5. Very much

10. How much is your immediate supervisor (boss) willing to listen to your personal problems?
    1. Don’t have any such person
    2. Not at all
    3. A little
    4. Somewhat
    5. Very much

11. How much are other people at work willing to listen to your personal problems?
    1. Don’t have any such person
    2. Not at all
    3. A little
    4. Somewhat
    5. Very much

12. How much are your spouse, friends and relatives willing to listen to your personal problems?
    1. Don’t have any such person
    2. Not at all
    3. A little
    4. Somewhat
    5. Very much

Workload and responsibility

The next few items are concerned with various aspects of your work activities.

1. How often do you experience lulls in your workload throughout your shift?
    1. Hardly any
    2. A little
    3. Some
    4. A lot
    5. A great deal

2. How much time do you have to think and contemplate?

1. Hardly any
2. A little
3. Some
4. A lot
5. A great deal

3. How much work load do you have?
   1. Hardly any
   2. A little
   3. Some
   4. A lot
   5. A great deal

4. What quantity of work do others expect you to do?
   1. Hardly any
   2. A little
   3. Some
   4. A lot
   5. A great deal

5. How much time do you have to do all your work?
   1. Hardly any
   2. A little
   3. Some
   4. A lot
   5. A great deal

6. How many projects, assignments or tasks do you have?
   1. Hardly any
   2. A little
   3. Some
   4. A lot
   5. A great deal

7. How many lulls between heavy work load periods do you have?
   1. Hardly any
   2. A little
   3. Some
   4. A lot
   5. A great deal

8. How much responsibility do you have for the future of others?
   1. Hardly any
   2. A little
   3. Some
   4. A lot
   5. A great deal

9. How much responsibility do you have for the job security of others?
   1. Hardly any
   2. A little
   3. Some

4. A lot
5. A great deal

10. How much responsibility do you have for the morale of others?
    1. Hardly any
    2. A little
    3. Some
    4. A lot
    5. A great deal

11. How much responsibility do you have for the welfare of others?
    1. Hardly any
    2. A little
    3. Some
    4. A lot
    5. A great deal

Scoring:

Perceived control: pages 5/6, questions 1-16
Compute average of items, no reverse scoring
Task control (questions 1,3,4,5,6,15 and 26)
Decision control (questions 8,10,11 and 13)
Physical environment control (questions 7 and 14)
Resource control (questions 2 and 12)

Social support from supervisor: pages 6/7, questions 1a, 2a, 3a, 4a
Compute average of items, no reverse scoring
Social Support from Co-workers: Pages 6 and 7, Questions 1B, 2B, 3B, 4B.
Compute average of items, no reverse scoring.

Social Support from Family/Friends: Pages 6 and 7, Questions 1C, 2C, 3C, 4C.
Compute average of items, no reverse scoring.

Quantitative Workload: Page 7, Questions 1 to 4, Page 8, Questions 1 to 7.
Compute average of items, reverse score Page 8, Questions 1, 2, 5, 7.

Variance in Workload: Page 7 and top of Page 8, Questions 5 to 7.
Compute average of items, no reverse scoring.
Quantitative Workload (Page 8, Questions 1, 2, 3, 4, 5, 7).
Variance in Workload (Page 7 and top of Page 8, Questions 1 to 7).

Responsibility for People: Bottom page 8, Questions 8 to 11.
Compute average of items, no reverse scoring.

Appendix I: Daily Hassles Scale-Revised

Information: The following questionnaire will ask you about the stressors that you experience in every day life. Please complete the following considering any stress/annoyance you have felt over the *past month*.

	Did not occur	Occurred, not severe	Occurred, some what severe	Occurred, moderately severe	Occurred very severe	Occurred, extremely severe
1. Concerns about inner conflicts	0	1	2	3	4	5
2. Not enough money for basic necessities	0	1	2	3	4	5
3. Too many things to do	0	1	2	3	4	5
4. Job dissatisfaction	0	1	2	3	4	5
5. Pollution	0	1	2	3	4	5
6. Problem with one's children	0	1	2	3	4	5
7. Feels conflicted over what to do	0	1	2	3	4	5
8. Not enough money for clothing	0	1	2	3	4	5

9. Not enough time to do the things one needs to do	0	1	2	3	4	5
10. Hassles from boss or supervisor	0	1	2	3	4	5
11. Crime	0	1	2	3	4	5
12. Yardwork or outside home maintenance	0	1	2	3	4	5
13. Regrets over past decisions	0	1	2	3	4	5
14. Not enough money for housing	0	1	2	3	4	5
15. Too many responsibilities	0	1	2	3	4	5
16. Don't like current work duties	0	1	2	3	4	5
17. Traffic	0	1	2	3	4	5
18. Financing children's education	0	1	2	3	4	5
19. Concerned about the meaning of life	0	1	2	3	4	5
20. Not enough money for entertainment and recreation	0	1	2	3	4	5
21. Not getting enough sleep	0	1	2	3	4	5
22. Don't like fellow workers	0	1	2	3	4	5
23. Concerns about news events	0	1	2	3	4	5
24. Property, investments and tax	0	1	2	3	4	5
25. Being lonely	0	1	2	3	4	5
26. Concerns about owing money	0	1	2	3	4	5
27. Not getting enough rest	0	1	2	3	4	5

28. Worries about decisions to change jobs	0	1	2	3	4	5
29. Rising prices of common goods	0	1	2	3	4	5
30. Overloaded with family responsibilities	0	1	2	3	4	5
31. Inability to express oneself	0	1	2	3	4	5
32. Not enough money for food	0	1	2	3	4	5
33. Too many interruptions	0	1	2	3	4	5
34. Customers or clients giving you a hard time	0	1	2	3	4	5
35. Concerns about accidents	0	1	2	3	4	5
36. Home maintenance	0	1	2	3	4	5

Scoring: Three summary scores produced 1) frequency, number of items checked (total 63), 2) cumulated severity, the sum of the 4-point severity ratings ranging from 0 to 252 (4 x 63) and 3) intensity, the cumulated severity divided by the frequency, which ranged from 0 – 4.

Appendix J: Coping Styles Questionnaire

Instructions: Although people may react in different ways to different situations, we all tend to have a characteristic way of dealing with things which upset us. How would you describe the way you *typically* react to stress? Circle Always (A), Often (O), Sometimes (S) or Never (N) for **each** item below:

Item	Always	Often	Sometimes	Never
1. Feel overpowered and at the mercy of the situation	A	O	S	N
2. Work out a plan for dealing with what has happened	A	O	S	N
3. See the situation for what it actually is and nothing more	A	O	S	N
4. See the problem as something separate from myself so I can deal with it	A	O	S	N
5. Become miserable or depressed	A	O	S	N
6. Feel that no-one understands	A	O	S	N
7. Stop doing hobbies or interests	A	O	S	N
8. Do not see the problem or situation as a threat	A	O	S	N
9. Try to find the positive side to the situation	A	O	S	N
10. Become lonely or isolated	A	O	S	N
11. Day dream about times in the past when things were better	A	O	S	N
12. Take action to change things	A	O	S	N
13. Have presence of mind when dealing with the problem or circumstances	A	O	S	N
14. Avoid family or friends in general	A	O	S	N
15. Feel helpless- there's nothing you can do about it	A	O	S	N
16. Try to find out more information to help make a decision about things	A	O	S	N
17. Keep things to myself and not let other know how bad things are for me	A	O	S	N

18. Think about how someone I respect would handle the situation and try to do the same	A	O	S	N
19. Feel independent of the circumstances	A	O	S	N
20. Sit tight and hope it all goes away	A	O	S	N
21. Take my frustrations out on the people closest to me	A	O	S	N
22. 'Distance' myself so I don't have to make any decision about the situation	A	O	S	N
23. Resolve the issue by not being identified with it	A	O	S	N
24. Assess myself or the problem without getting emotional	A	O	S	N
25. Cry, or feel like crying	A	O	S	N
26. Try to see things from the other person's point of view	A	O	S	N
27. Respond neutrally to the problem	A	O	S	N
28. Pretend there's nothing the matter, even if people ask what's bothering me	A	O	S	N
29. Get things into proportion – nothing is really that important	A	O	S	N
30. Keep reminding myself about the good things about myself	A	O	S	N
31. Feel that time will sort things out	A	O	S	N
32. Feel completely clear-headed about the whole thing	A	O	S	N
33. Try to keep a sense of humour – laugh at myself or the situation	A	O	S	N
34. Keep thinking it over in the hope that it will go away	A	O	S	N
35. Believe that I can cope with most things with the minimum of fuss	A	O	S	N
36. Try not to let my heart rule my head	A	O	S	N
37. Eat more (or less) than usual	A	O	S	N
38. Daydream about things getting better in the future	A	O	S	N
39. Try to find a logical way of explaining the problem	A	O	S	N
40. Decide it's useless to get upset and just get on with things	A	O	S	N
41. Feel worthless and unimportant	A	O	S	N
42. Trust in fate – that things have a way of working out for the best	A	O	S	N
43. Use my past experience to try and deal with the situation	A	O	S	N
44. Try to forget the whole thing	A	O	S	N
45. Just take nothing personally	A	O	S	N
46. Become irritable or angry	A	O	S	N
47. Just give the situation my full attention	A	O	S	N
48. Just take one step at a time	A	O	S	N

49. Criticise or blame myself	A	O	S	N
50. Simply and quickly disregard all irrelevant information	A	O	S	N
51. Pray that things will just change	A	O	S	N
52. Think or talk about the problem as if it did not belong to me	A	O	S	N
53. Talk about it as little as possible	A	O	S	N
54. Prepare myself for the worst possible outcome	A	O	S	N
55. Feel completely calm in the face of any adversity	A	O	S	N
56. Look for sympathy and understanding from people	A	O	S	N
57. See the thing as a challenge that must be met	A	O	S	N
58. Be realistic in my approach to the situation	A	O	S	N
59. Try to think about or do something else	A	O	S	N
60. Do something that will make me feel better	A	O	S	N

Scoring

Items	No. of items	Subscale	Possible total
2, 9, 12, 16, 18, 24, 26, 30, 35, 36, 39, 43, 47, 48, 57, 58	16	Rational Coping	48
3, 4, 8, 13, 19, 23, 27, 29, 32, 33, 40, 45, 50, 52, 55	15	Detached Coping	45
1, 5, 6, 7, 10, 14, 15, 21, 25, 34, 37, 41, 46, 49, 54, 56	16	Emotional Coping	48
11, 17, 20, 22, 28, 31, 38, 42, 44, 51, 53, 59, 60	13	Avoidance Coping	39

Appendix K: Sickness absence questionnaire

1. Are you currently off work sick? If so, why?

2. How long have you currently been off sick?

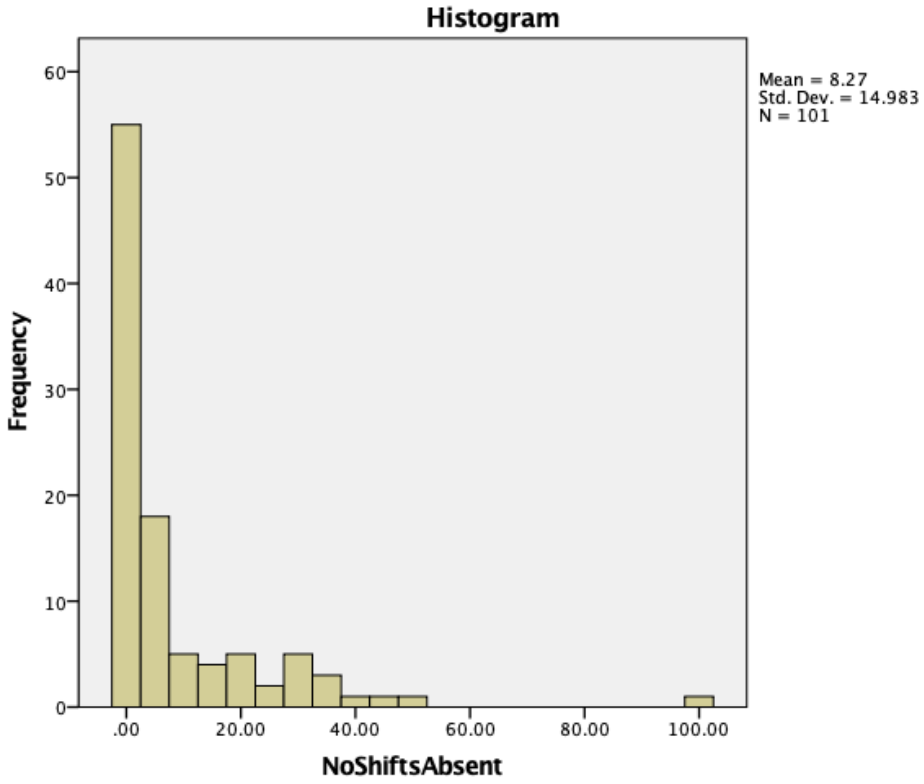
3. Over the past 6 months, how many shifts have you been off sick in total?

4. Please specify below whether you have taken a leave of absence due to the following causes and if so, on average how many days off sick did you have because of it?

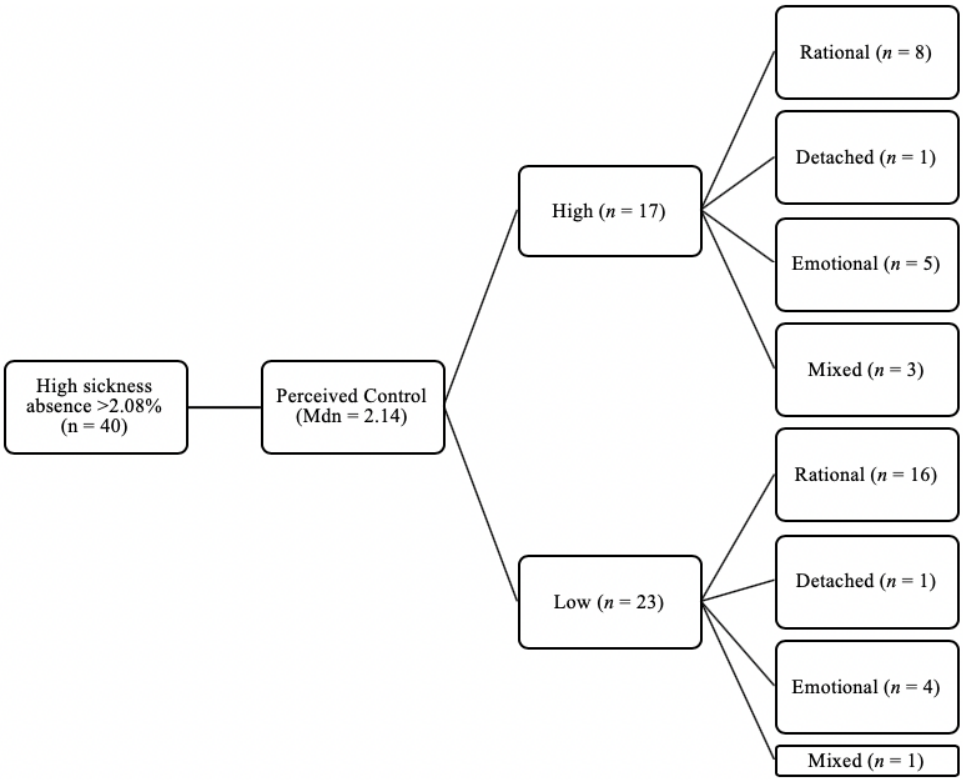
Cause	**Have you taken a leave of absence because of this?**	**Number of days off sick**
Anxiety, depression or any other psychiatric illness	Yes No	
Stress	Yes No	
Back problems	Yes No	
Other musculoskeletal	Yes No	
Cold, cough, flu, influenza	Yes No	
Asthma	Yes No	
Chest/respiratory problems	Yes No	
Headache/migraine	Yes No	
Benign and malignant tumours, cancers	Yes No	
Blood disorders e.g. anemia	Yes No	
Heart, cardiac and circulatory problems	Yes No	
Burns, poisoning, frostbite, hypothermia	Yes No	
Ear, nose, throat (ENT)	Yes No	
Dental or oral problems	Yes No	
Eye problems	Yes No	
Endocrine/gland problems	Yes No	
Gastrointestinal problems	Yes No	
Genitourinary or gynecological problems	Yes No	
Infectious diseases	Yes No	
Injury/fracture	Yes No	
Nervous system disorders	Yes No	
Pregnancy related disorders	Yes No	
Skin disorders	Yes No	
Substance dependency	Yes No	

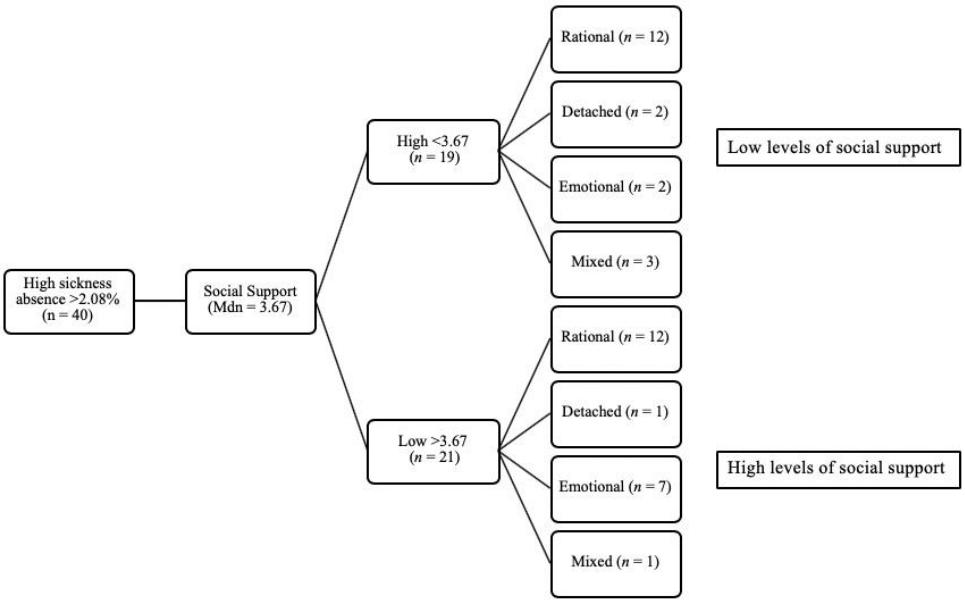
Whole day medical appointment	Yes No	
Unknown causes	Yes No	
Other	Yes No	

Appendix L: Histogram of data distribution demonstrating a strong negative skew in the data

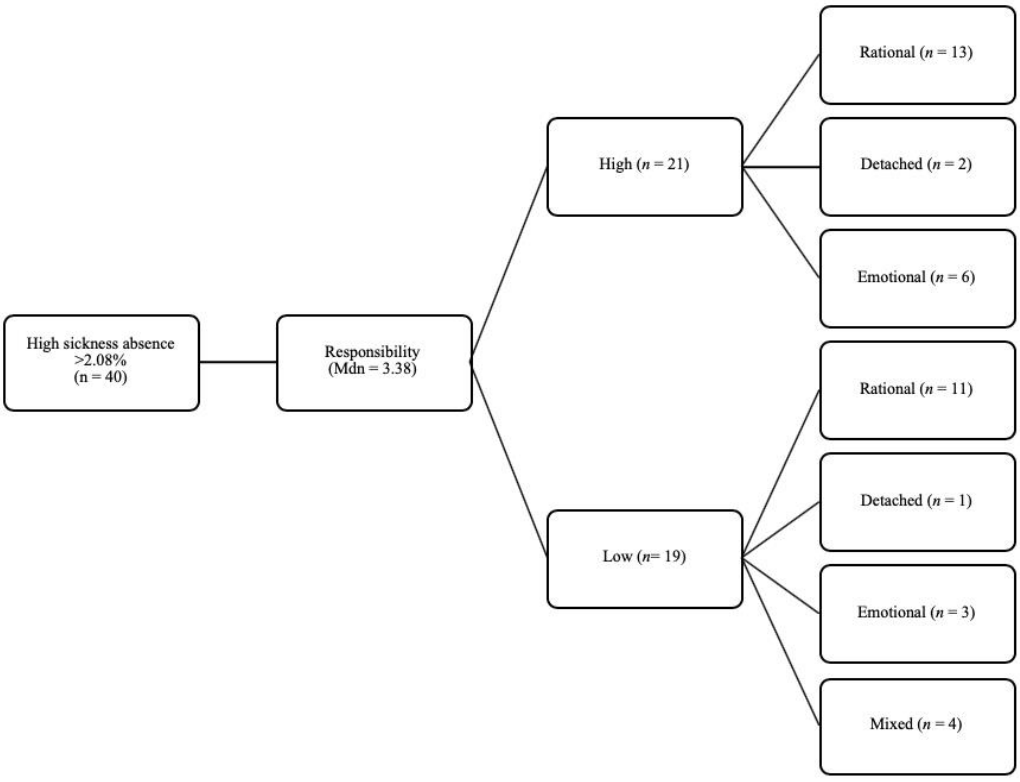


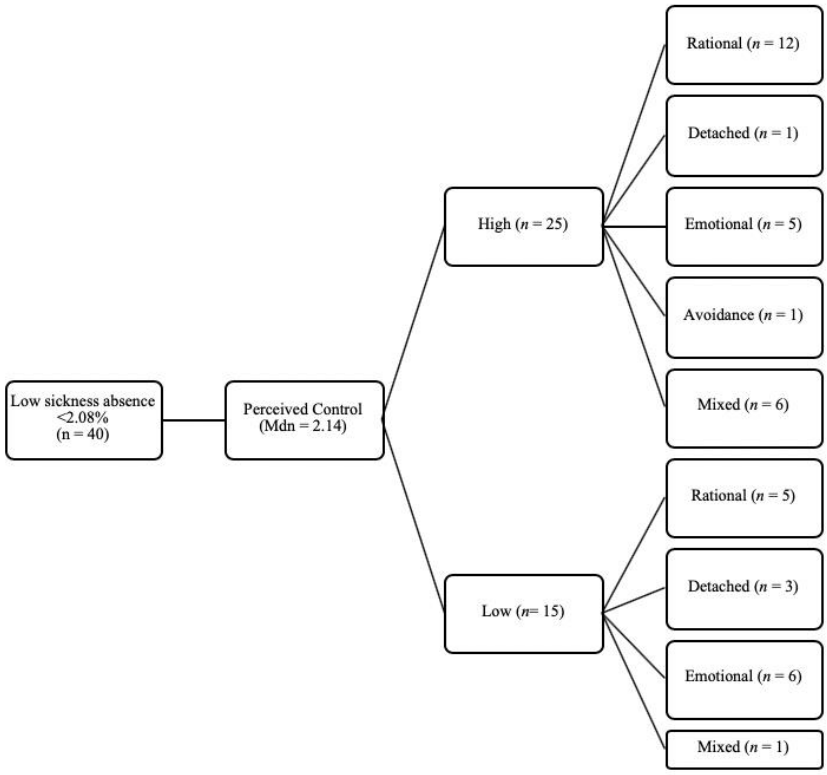
Appendix M: Sampling frames for qualitative recruitment

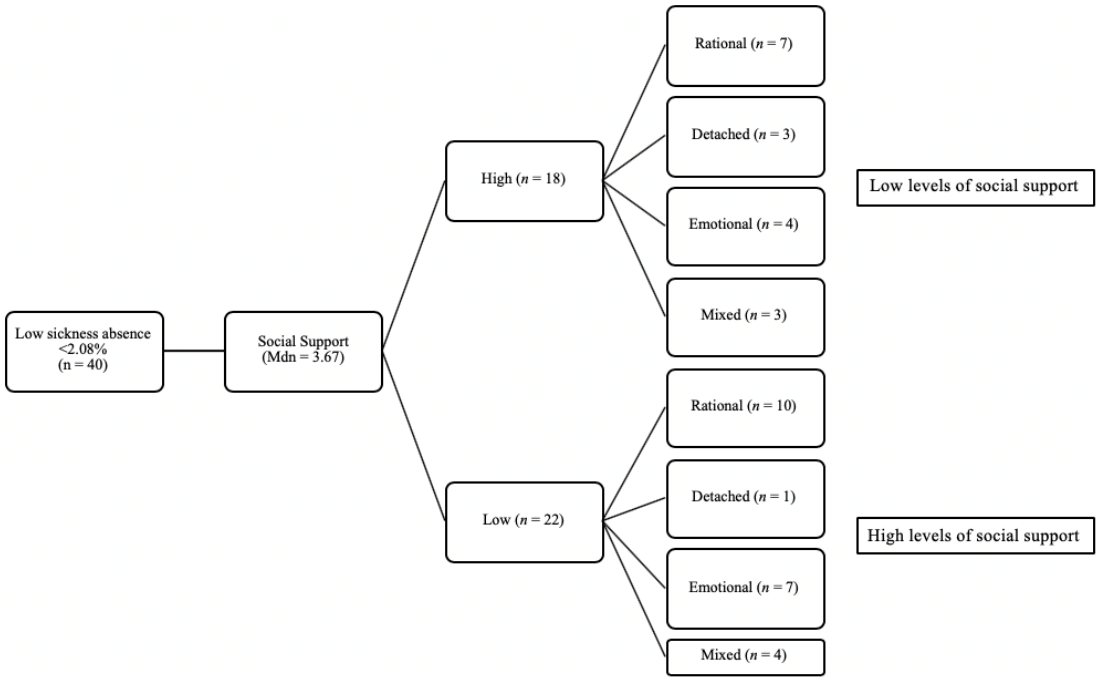


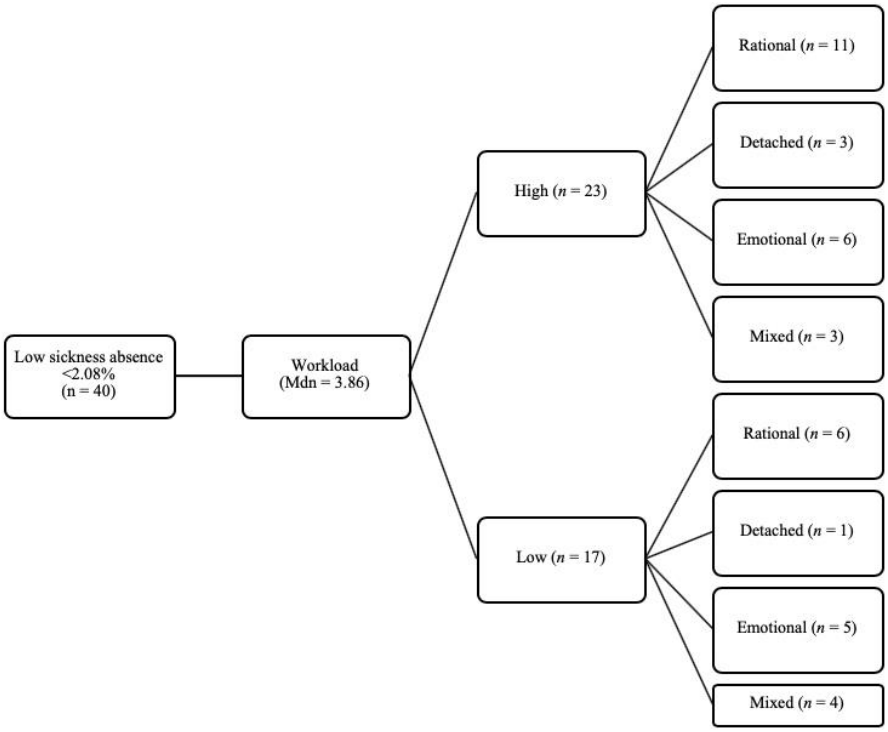


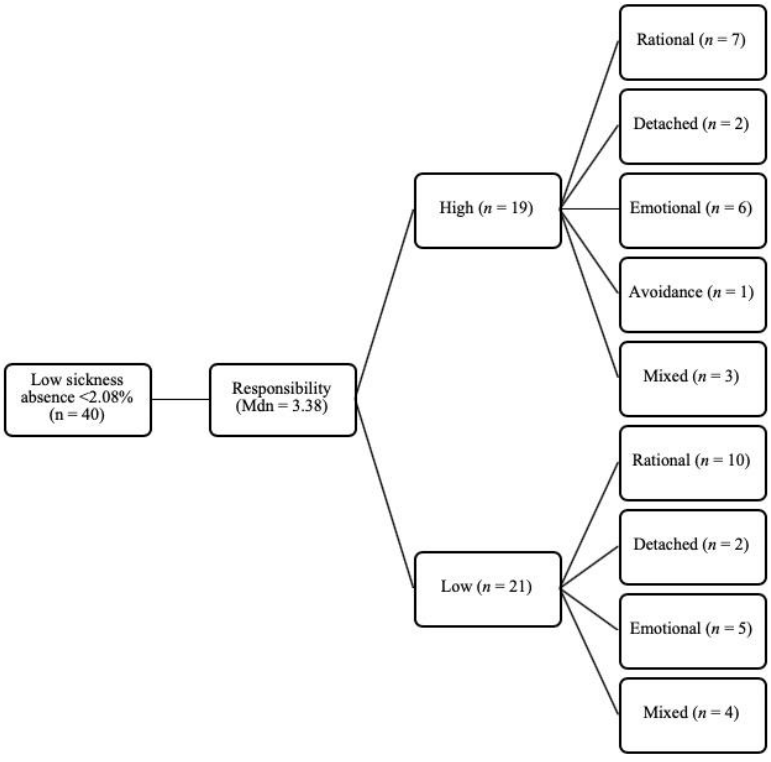
Note. A high score on this measure indicates a lower level of social support




Low sickness absence
<2.08%
(n = 40)
Perceived Control
(Mdn = 2.14)
High (n = 25)
Rational (n = 12)
Detached (n = 1)
Emotional (n = 5)
Avoidance (n = 1)
Mixed (n = 6)
Low (n= 15)
Rational (n = 5)
Detached (n = 3)
Emotional (n = 6)
Mixed (n = 1)


Low sickness absence
<2.08%
(n = 40)
Social Support
(Mdn = 3.67)
High (n = 18)
Rational (n = 7)
Detached (n = 3)
Emotional (n = 4)
Mixed (n = 3)
Low levels of social support
Low (n = 22)
Rational (n = 10)
Detached (n = 1)
Emotional (n = 7)
Mixed (n = 4)
High levels of social support


Low sickness absence <2.08% (n = 40)
Workload (Mdn = 3.86)
High (n = 23)
Rational (n = 11)
Detached (n = 3)
Emotional (n = 6)
Mixed (n = 3)
Low (n = 17)
Rational (n = 6)
Detached (n = 1)
Emotional (n = 5)
Mixed (n = 4)


Low sickness absence <2.08% (n = 40)
Responsibility (Mdn = 3.38)
High (n = 19)
Rational (n = 7)
Detached (n = 2)
Emotional (n = 6)
Avoidance (n = 1)
Mixed (n = 3)
Low (n = 21)
Rational (n = 10)
Detached (n = 2)
Emotional (n = 5)
Mixed (n = 4)

Appendix N: Qualitative interview schedule

Sickness absence in last 6 months	
Job category	

Introduction

Tick when complete:

- ☐ Introduce self to participant and explain what the purpose of this interview is and what topics will be covered
- ☐ Go through consent form to confirm consent
- ☐ Ask participants if they have any questions
- ☐ Remind participants that quotes may be used within the write-up of the thesis but the participant will remain anonymous by using a pseudonym
- ☐ Tell participants that this is a safe space, ask them to answer openly and honestly. Please feel free to be really specific within your answers. If this means that you will discuss names and identifiable places they will be anonymised within the transcription

of this interview. If however you would rather not state names or places, then feel free to withhold this information.

☐ Ask participant if they are happy to begin the interview

Information about job role and responsibilities

Q: Could you please describe your current job role?
Prompts: Are you patient-facing? Are you on secondment? If so, what was your substantive role? How long have you worked in that role? What are your main responsibilities? What is an average shift like?

Q: Tell me about how you came into the profession
Prompts: What made you decide to become a [insert job role]?

Q: What are some of the challenges you experience within your job?
Prompts: Could you give an example? Why is this challenging? Do these challenges affect you in any way? Do you see any challenges affecting other members of staff?

Q: What do you like about your job?
Prompts: Why? How does that make you feel? What is your favourite thing about the job? Do you find the work meaningful? Why/why not? Do you feel satisfied by your job?

Q: What don't you like about your job?
Prompts: Could you give any examples? Why? How does that make you feel? What is your least favourite thing about the job? Do you find that difficult? Why?

Q: What would you change about your job if you had the chance?
Prompts: Why? What difference would that make to you/ your colleagues/ managers/ patients?

FOR MANAGERS ONLY:

Q: Could you tell me about the team you manage?
Prompts: How many people?

Stressors and stress in the workplace

Q: Could you please describe your working environment?
Prompts: What do you like about it? What do you dislike about it? Do you find anything easy/difficult?

Q: Could you please describe your workload?
Prompts: What is your work-life balance like? How do you feel about your workload? What do you like/dislike about it?

Q: Could you say something about the demands of your job role?
Prompts: Why is that? What makes it so demanding?

Q: Could you tell me about some of the things that cause you stress at work?

Prompts: Could you please give me an example? Why does this cause you stress? How does this make you feel?

Q: What happens when you experience or feel stress?
Prompts: What affect does it have on your body? Mind? Relationships?

Q: How do you deal with the stress you experience?
Prompts: Is that helpful?

Stressors and stress at home

Q: Could you please tell me about some of the things that cause you stress at home?
Prompts: Why does this cause you stress? How does this make you feel?

Q: How do you deal with the stress you experience?
Prompts: Is that helpful?

Q: How does stress from home affect your work?
Prompts: Why do you think that? How does it impact your work?

IF PARTICIPANT EXPERIENCES STRESS AT HOME AND WORK:

Q: So we have talked a little bit about home stress and work stress. How do you cope with home stress verses work stress?
Prompts: Why do you do that? Do you do anything similar/different?

Coping mechanisms

Q: We spoke earlier about some of the challenges you experience at work. Could you please explain to me how you cope with some of those challenges?
Prompts: Could you provide me with any examples? Examples include trauma, patients, resources, staffing, conflict, bullying. Do you talk to anyone? Do you do anything?

Q: How useful do you think those coping strategies are?
Prompts: Why do you think that? Do you think you are good at coping with challenges?

Q: Could you please describe the support network you have at work?
Prompts: So by support network I mean anyone who you can talk to about your experiences and get help/advice e.g. managers, colleagues/other staff, do you find it easy to talk to these people?

Q: Could you please describe the support network you have at home?
Prompts: Family, friends, do you find it easy to talk to these people?

Q: What do you think of these support networks?
Prompts: Do you feel supported at work? What could be done better? What other support do you think you/other people could need?

Q: Talking about some of your other colleagues now, how easy or difficult is it to identify when someone in your team needs help?

Prompts: Why? How can you identify it? Would you know what to do?

Q: Have you ever recommended your colleague/s seek help?
Prompts: Why? What made you do that? Where did you refer them to?

Q: Have you ever sought help whilst you have been at work?
Prompts: How did you decide where to go? Was it useful? Mental health, GP, friends and family support

Q: Have you ever used any ambulance-specific help resources?
Prompts: How did you decide where to go? Was it useful? Occupational health, Mind blue light service, chaplaincy

Q: Have you ever sought help outside of the ambulance service?
Prompts: How did you decide where to go? Was it useful? GP, hospital, friends, family

Q: What do you think of these resources?
Prompts: What is useful/effective? What is not so useful/effective? Why?

Sickness absence

THOSE WHO HAVE TAKEN A LEAVE OF ABSENCE ONLY:

Q: In the past 6 months, what were some of the reasons you took a leave of absence from work?
Prompts: How does that make you feel? Illness, motivation

Q: In the past 6 months do you feel like you should have taken time off?
Prompts: Why? What stopped you?

Q: Have you ever taken a leave of absence because you felt stressed?
Prompts: Why? How long was the leave of absence? Do you feel like you should have taken a leave of absence when stressed?

Q: Could you please explain how you would go about telling your employer that you were going to be taking the day off sick?
Prompts: Telephone call, email, how do you describe the reason for you call?

Q: Is the sickness absence policy adhered to?
Prompts: Why/why not?

Q: How do you feel when you take a leave of absence?
Prompts: What do you think your colleagues/manager might feel?

Q: What do you think and feel when a colleague takes a leave of absence?
Prompts: What do you think they think?

Q: Have you ever turned up at work when you are ill?

Prompts: Why? How did that make you feel?

Q: What do you think the repercussions are for taking sick leave?
Prompts: Yourself, patients, colleagues/other staff, managers and for the service

Q: Statistics tell us that ambulance service employees have the highest rate of sickness absence in the NHS. Why do you think that is?
Prompts: Who do you think is responsible for this?

FOR MANAGERS ONLY:

Q: Do you adhere to the sickness absence policy of your organisation?
Prompts: Why/why not? Do you think others use it?

Q: What do you think of this policy?
Prompts: Do you like it?

Q: Could you please describe what happens when a member of staff calls in sick?
Prompts: How do they contact you? How do they describe the reason for their call?

Ideas for interventions

Q: If you think about some of the resources that are available within the ambulance service and externally, what do you think works best to support staff?
Prompts: Why?

Q: What do you think does not work?

Q: What would you like to see in the future?
Prompts: Help-seeking, resources

Q: How do you think sickness absence [rates] could be improved?
Prompts: Why do you think that?

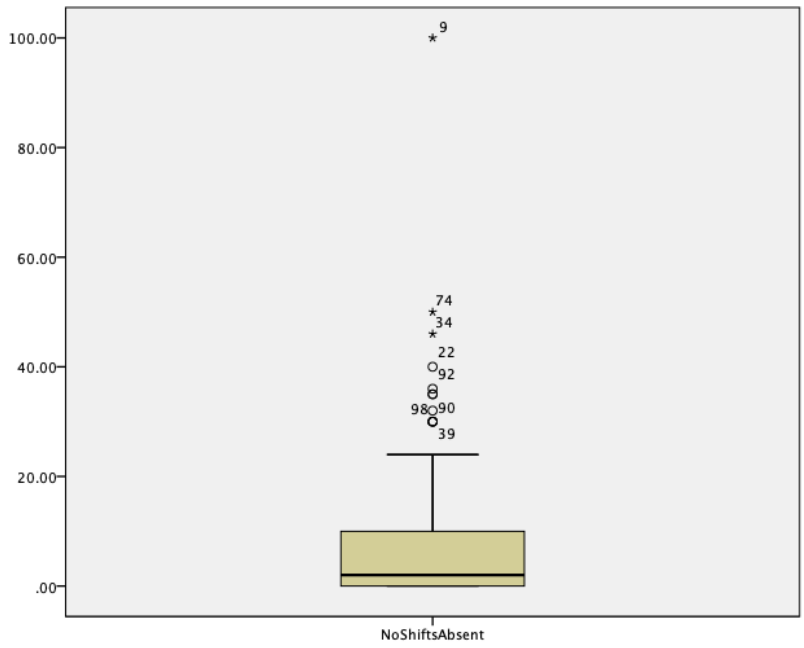
Finish

Q: Do you have anything else you would like to add?

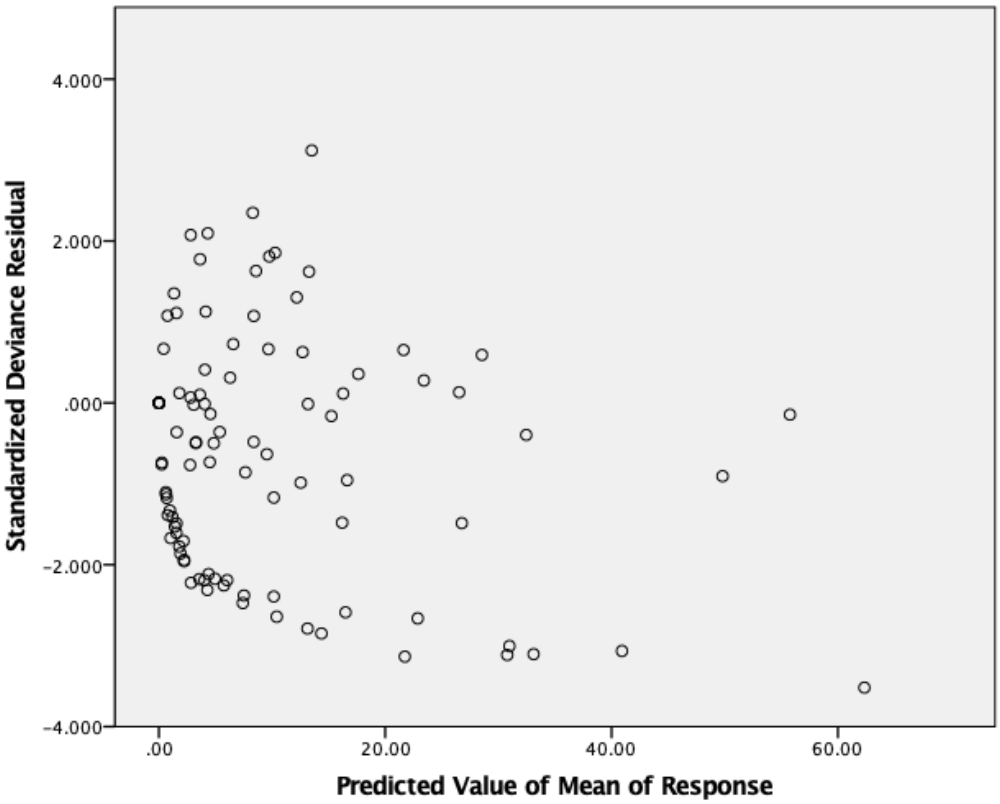
Q: Do you have any questions?

- Thank you for your time
- If you have any further questions please do not hesitate to contact me by phone or email
- If you have been affected by anything we have spoken about today I would recommend getting in contact with the Mind Blue Light Programme on 0300 303 5999 they are open 9am – 6pm Monday to Friday or you can email them at bluelightinfo@mind.org.uk or text them on 84999

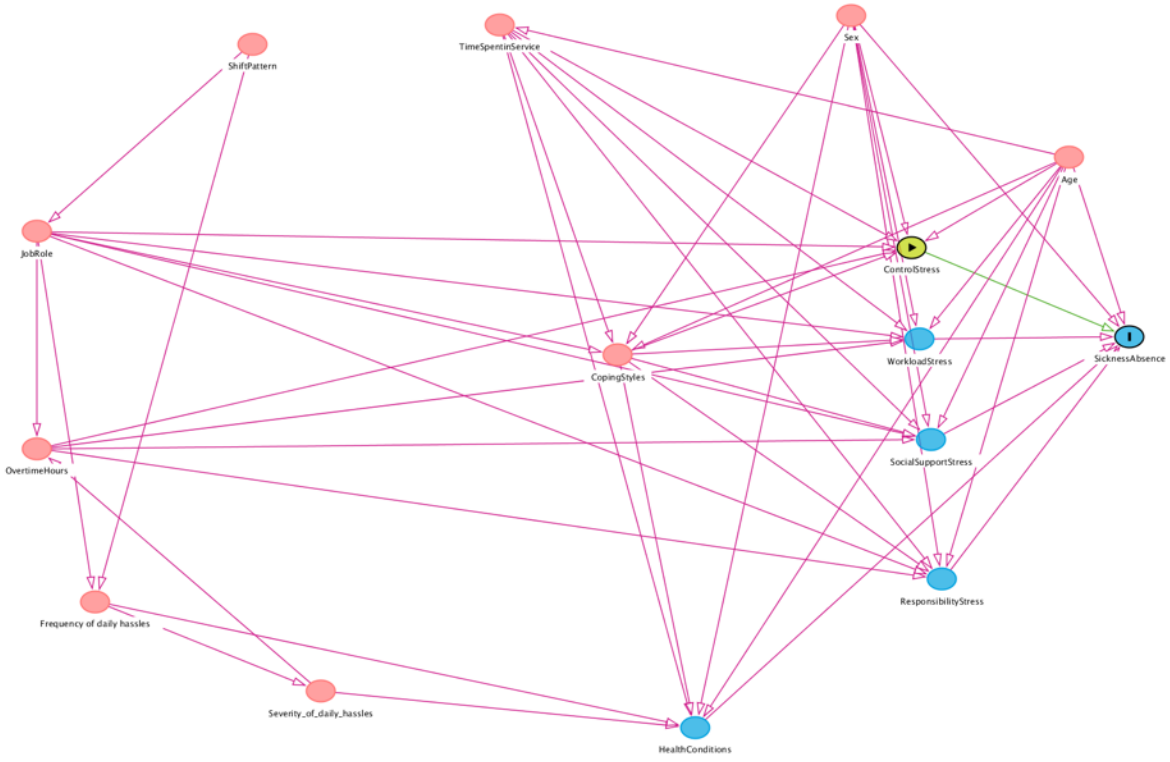
Appendix O: Box plot demonstrating outliers in the data set

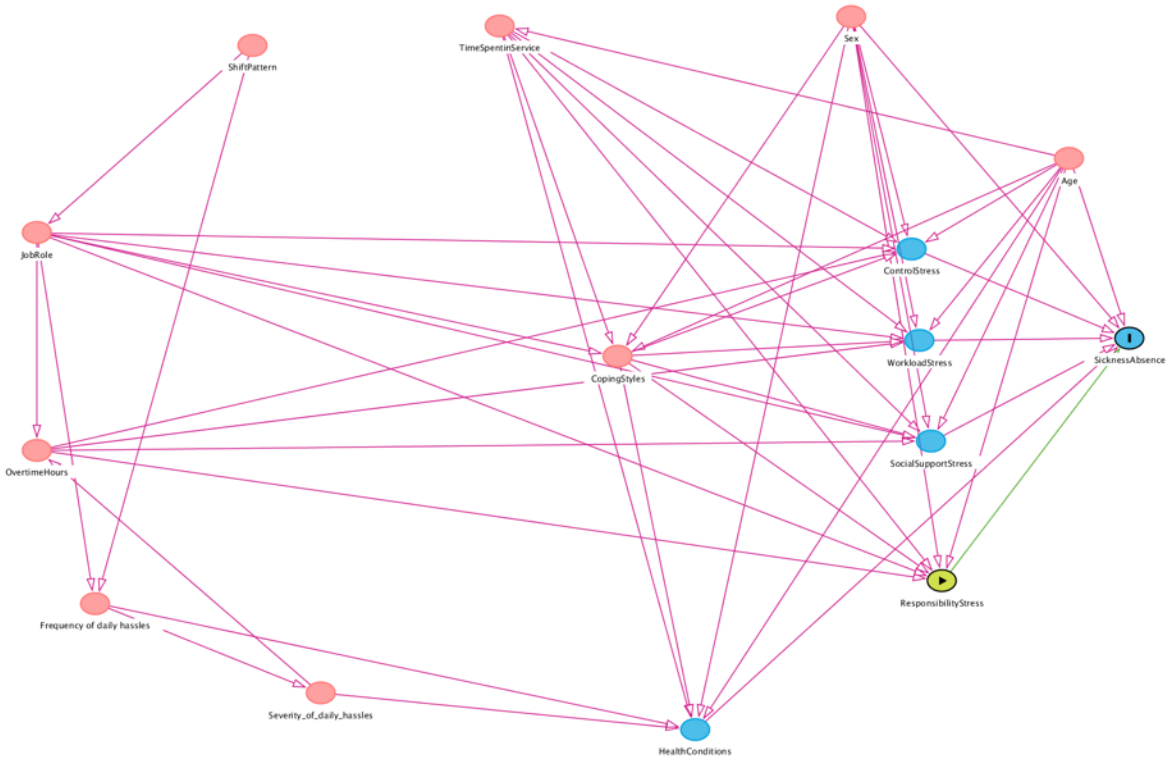


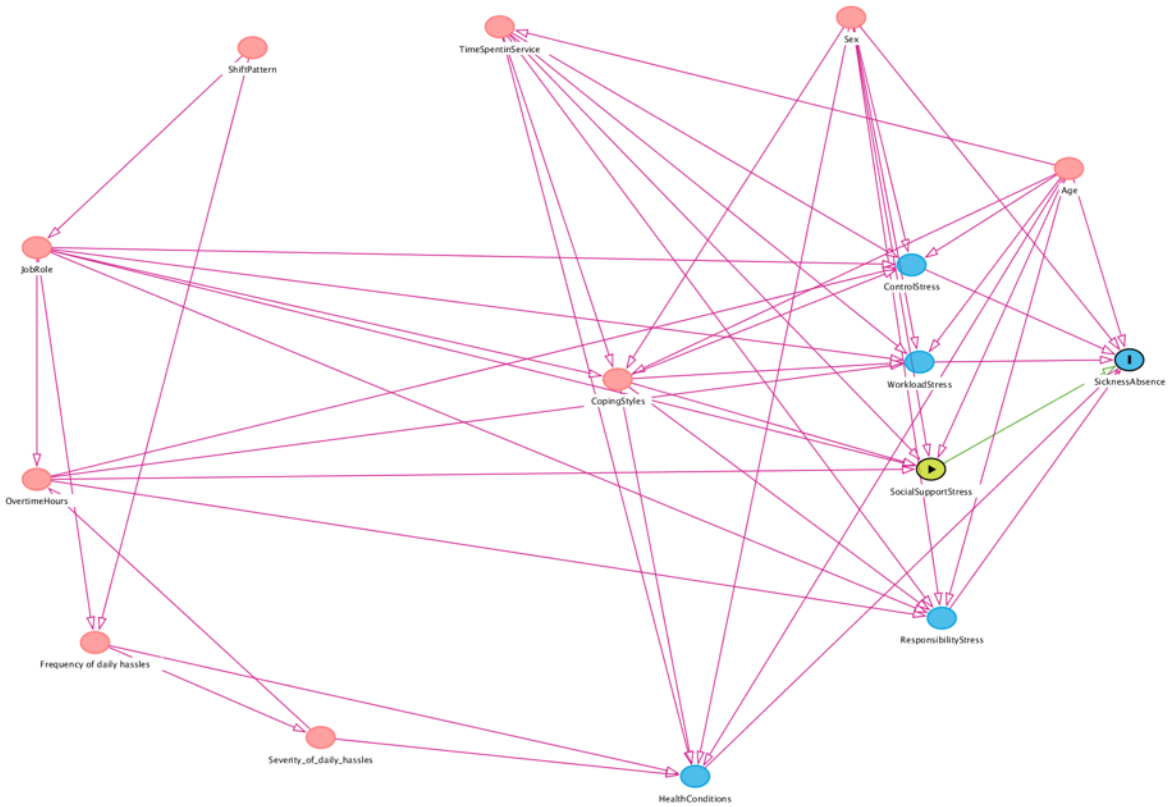
Appendix P: Scatter plot showing 95% of residuals under 2.0



Appendix Q: Directed Acyclic Graphs




ShiftPattern
TimeSpentinService
Sex
Age
JobRole
ControlStress
WorkloadStress
SicknessAbsence
CopingStyles
SocialSupportStress
OvertimeHours
ResponsibilityStress
Frequency of daily hassles
Severity_of_daily_hassles
HealthConditions


ShiftPattern
TimeSpentinService
Sex
Age
JobRole
ControlStress
WorkloadStress
SicknessAbsence
CopingStyles
SocialSupportStress
OvertimeHours
ResponsibilityStress
Frequency of daily hassles
Severity_of_daily_hassles
HealthConditions

Appendix R: Example of interview transcript (telephone interview)

Key
Bold: Interviewer
Regular: Participant
[redacted]: Identifiable information removed

So my first question for you then is just could you please describe your current job role

Ambulance technician in the [redacted] group for [redacted]

Okay and what is your kind of average shift like

What length wise they're all 12 hours 11 and a quarter because we get 45 minute break they've changed our rotas just recently so it did tend to be a morning which is a 7 till 7 7 in the morning till 7 at night then a 10 in the morning to a 10 at night and then a night shift which is 7 at night to 7 in the morning that is part of the pattern that they kind of it goes three on three of three on three off two on two off it's all over the place

And what are your main responsibilities

Well initially starting duty when we've got a vehicle it's checking equipment checking the vehicle prepping it ready to go out on calls if you like once we've done the kind of basics we log on so then control are aware that we are available to go and generally as soon as we've done that there's a job waiting for us whatever time of day of shift we start so there's not very much downtime at all

Okay and could you tell me a little bit about how you came into the profession

I've worked in the health service for 31 years now so I started off I'd been working abroad came back signed up with an agency for different kind of jobs one of the jobs was working for the NHS transport service and while I was doing that the ambulance service took over the transport side and then within that was an opportunity to go on to a PTS which is patient transport service so I did that for roundabout I worked in transport for two and a half years I think it was and then on the PTS for around about two and a half years something like that and then when I was doing that an opportunity came to go on accident and emergency that then there weren't many paramedics so it was all we were you kind of came on PTS as an ambulance man then you went off and did your training to do A&E work and you came back as a qualified ambulance man and you did another course which gave you some paramedical skills which were basically some drugs that we used to give and the obviously over the years it's changed quite a lot since I've been on

Okay thank you

I kind of drifted into it

Appendix S: Example of interview transcript (face to face interview)

Key
Bold: Interviewer
Regular: Participant
[redacted]: Identifiable information removed

So my first question then is could you please describe a bit about your current job role

Okay I am a control room manager with [redacted] which means that I have responsibility for the day to day running of the control room I work 12 hour shifts two days followed by two nights usually and then a bunch of days off my primarily part of my role is to oversee the ambulance dispatch function I work in a small room of [redacted] control rooms we dispatch ambulance for [redacted] which consists of usually 4 dispatch desks and usually 4 dispatchers as the manager for the control room I also have oversight and responsibility for the other side of the operation which is answering the 999 calls bit less hands on with that partly because we have a team of excellent team leaders who place who really are the experts in all of the you can imagine different scenarios and challenges that come through that particular channel but also because traditionally the route to promotion to where I am now tends to be or tended to be through the dispatch role so most of the most of my peers as control room managers have got you know usually several years of experience as I have as a dispatcher officially look after the whole thing

Fantastic thank you very much so I know you've slightly touched upon it but could you kind of describe what an average shift is like for you

At the moment I would say it can be challenging I've been fairly recently promoted to a substantive role as manager but I do have approximately a year and a half experience where I was acting up in the role all be it with a different team but and I would say even in the less than 2 years that I've been in this role the nature of the game has changed completely I think the best way I can probably illustrate that is it used to be the case that we'd have ambulances you've probably seen them dotted around all over the place waiting for the next emergency nowadays we hold emergencies and as and when an ambulance becomes available then the aim of the game is to work out which emergency on which desk we're going to send the ambulance to so it's a complete shift really in how we play the game that said an average shift I would say is busy occasionally we get a shift which is not quite so bad if we take the last set of 4 shifts a few days ago is reasonably typical we had 3 busy shifts including one where we were short staffed as well which made it even more challenging followed by one shift which was notably less busy which is unusual so then it's a question of switching hats and seeing you know what's the most urgent thing on my own task list if you like that I can get through particularly if there's any pieces of work that needs to be done that also involve the team rather than stuff that I can do by hiding in a room somewhere because those opportunities to actually get things like training or briefings or anything like that sorted out are so very rare now that it almost becomes high pressured if you're not so busy in terms of 999 emergencies there's then equivalent pressure to get all of the other things done because it's so rare to actually have that opportunity